

This document provides pertinent information concerning the reissuance of the VPDES Permit listed below. This permit is being processed as a Minor, Municipal permit. The discharge results from the operation of a 0.015 MGD wastewater treatment plant. This permit action consists of updating the proposed effluent limits to reflect the current Virginia Water Quality Standards (effective January 6, 2011) and updating permit language as appropriate. The effluent limitations and special conditions contained within this permit will maintain the Water Quality Standards of 9VAC25-260 et seq.

1. Facility Name and Mailing Address: Aldie Wastewater Treatment Plant  
P.O. Box 4000  
Ashburn, VA 20146  
Facility Location: 39506 John Mosby Hwy  
Aldie, VA 20105  
Facility Contact Name: Ben Shoemaker  
Facility Email Address: bshoemaker@loudounwater.org  
SIC Code: 4952 WWTP  
County: Loudoun  
Telephone Number: (571) 291-7937
2. Permit No.: VA0089133  
Other VPDES Permits: Not Applicable (NA)  
Other Permits: NA  
E2/E3/E4 Status: NA  
Expiration Date: December 14, 2016
3. Owner Name: Loudoun County Sanitation Authority dba Loudoun Water  
Owner Contact / Title: Ben Shoemaker, Regulatory Affairs and Compliance  
Owner Email Address: bshoemaker@loudounwater.org  
Telephone Number: (571) 291-7937
4. Application Complete Date: June 2, 2016  
Permit Drafted By: Alison Thompson  
Draft Permit Reviewed By: Anna Westernik  
Public Comment Period : Start Date:  
Date Drafted: September 6, 2016  
Date Reviewed: September 9, 2016  
End Date:
5. Receiving Waters Information: See Attachment 1 for the Flow Frequency Determination.  
Receiving Stream Name: Little River  
Drainage Area at Outfall: 41.4 sq.mi.  
Stream Basin: Potomac River  
Section: 9  
Special Standards: None  
7Q10 Low Flow: 0.14 MGD  
1Q10 Low Flow: 0.11 MGD  
30Q10 Low Flow: 0.30 MGD  
Harmonic Mean Flow: 2.6 MGD  
Stream Code: 1aLIV  
River Mile: 4.58  
Subbasin: Potomac River  
Stream Class: III  
Waterbody ID: VAN-A08R; PL13  
7Q10 High Flow: 1.7 MGD  
1Q10 High Flow: 1.2 MGD  
30Q10 High Flow: 3.0 MGD  
30Q5 Flow: 0.56 MGD
6. Statutory or Regulatory Basis for Special Conditions and Effluent Limitations:
 

<u>  X  </u> State Water Control Law <u>  X  </u> Clean Water Act <u>  X  </u> VPDES Permit Regulation <u>  X  </u> EPA NPDES Regulation	<u>  X  </u> EPA Guidelines <u>  X  </u> Water Quality Standards _____ Other (PES, Occoquan Policy, Dulles) _____ (GP – note regulation and title)
---	---
7. Licensed Operator Requirements: Class IV

## VPDES PERMIT PROGRAM FACT SHEET

VA0089133  
PAGE 2 of 11**8. Reliability Class:** Class I**9. Facility / Permit Characterization:**

<input type="checkbox"/> Private	<input checked="" type="checkbox"/> Effluent Limited	<input type="checkbox"/> Possible Interstate Effect
<input type="checkbox"/> Federal	<input checked="" type="checkbox"/> Water Quality Limited	<input type="checkbox"/> Compliance Schedule
<input type="checkbox"/> State	<input type="checkbox"/> Whole Effluent Toxicity Program	<input type="checkbox"/> Interim Limits in Permit
<input checked="" type="checkbox"/> POTW	<input type="checkbox"/> Pretreatment Program	<input type="checkbox"/> Interim Limits in Other Document
<input checked="" type="checkbox"/> eDMR Participant	<input checked="" type="checkbox"/> Total Maximum Daily Load (TMDL)	

**10. Wastewater Sources and Treatment Description:**

The Aldie WWTP serves the small community of Aldie with an approximate population of 178 (approximately 51 connections). There are no known industrial discharges to the wastewater plant.

The 0.015 MGD wastewater treatment plant treats the municipal wastewater utilizing a bar screen, extended aeration, clarification, disinfection with ultraviolet radiation (UV), and post aeration.

TABLE 1 OUTFALL DESCRIPTION				
Number	Discharge Sources	Treatment	Design Flow	Latitude / Longitude
001	Domestic Wastewater	See Section 10	0.015 MGD	38° 58' 39" 77° 38' 14"
See Attachment 2 for (Middleburg, DEQ #206B) topographic map.				

**11. Sludge Treatment and Disposal Methods:**

The waste activated sludge is stored in an aerated holding tank. The facility pumps and hauls the sludge to the Broad Run WRF (VA0091383) on an as needed basis.

**12. Other Permitted Discharges and Monitoring Stations Located Within Waterbody VAN-A08R:**

TABLE 2 LOCATED WITHIN WATERBODY VAN-A08R			
ID / Permit Number	Name	Type	Stream
1aLIV004.78	DEQ Monitoring Stations	Ambient and Biological	Little River at Route 50 Bridge
1aLIV001.70		Ambient	Little River at Route 15 Bridge

**13. Material Storage:**

There are no materials stored onsite.

**14. Site Inspection:**

Performed by DEQ-NRO Water Compliance staff on November 5, 2009 (Attachment 3).

**15. Receiving Stream Water Quality and Water Quality Standards:****a. Ambient Water Quality Data**

This facility is located on Little River. DEQ Ambient monitoring station 1aLIV004.78 is located on Little River at Route 50, approximately 0.20 mile upstream from Outfall 001. DEQ Ambient monitoring station 1aLIV001.70 is located on Little River at Route 15, approximately 3.0 miles downstream from Outfall 001. The following is the water quality summary for this segment of Little River, as taken from the 2014 Integrated Report:

Class III, Section 9.

DEQ monitoring stations located in this segment of Little River:

- ambient water quality monitoring station 1aLIV001.70, at Route 15
- ambient water quality monitoring station 1aLIV004.78, at Route 50

Biological monitoring finds benthic macroinvertebrate impairments, resulting in an impaired classification for the aquatic life use. A benthic (sediment) TMDL for the Little River watershed has been completed and approved. The recreation and wildlife uses are considered fully supporting. The fish consumption use was not assessed.

**b. 303(d) Listed Stream Segments and Total Maximum Daily Loads (TMDLs)**

TABLE 3. 303(D) IMPAIRMENT AND TMDL FOR THE RECEIVING STREAM					
Waterbody Name	Impaired Use	Cause	TMDL completed	WLA	Basis for WLA
Little River	Aquatic Life	Benthic Macro-invertebrates	Goose Creek Watershed Benthic (Sediment) 04/26/2004	0.7 tons sediment/year**	TSS concentration 30 mg/L --- 0.015 MGD

\*This facility was assigned a total WLA of 3.5 tons/year in the Benthic TMDL for the Goose Creek and Little River watersheds. This total WLA was calculated based upon the permitted maximum average concentration for TSS (mg/L) and an assumption of the facility operating at five times the design flow. The factor of five for the design flow was used as a conservative measure to build in future growth in the watershed. Although the future growth for the watershed was determined by the design flow of each facility within in the watershed, the future growth is available for both new and expanding permits in the watershed. The actual WLA for this facility without including the future growth is 0.7 tons/year.

*The remainder of this page was intentionally left blank.*

TABLE 4.  
INFORMATION ON DOWNSTREAM 303(D) IMPAIRMENTS AND TMDLS

Waterbody Name	Impaired Use	Cause	Distance From Outfall	TMDL completed	WLA	Basis for WLA
Goose Creek	Recreation	<i>E. coli</i>	12.3 miles	Goose Creek Bacteria TMDL 5/1/2003	4.16E+10 cfu/year fecal coliform bacteria  2.61E+10 cfu/year <i>E. coli</i> bacteria*	200 cfu/100 ml fecal coliform  126 cfu/100 ml <i>E. coli</i> * --- 0.015 MGD
Goose Creek Reservoir	Fish Consumption	PCBs	11.3 miles	No	---	---

\* The WLA is expressed in the Goose Creek Watershed Bacteria TMDL as cfu/year fecal coliform.

This facility discharges to the Little River within the Chesapeake Bay watershed. The receiving stream has been identified in the Chesapeake Bay TMDL; approved by the Environmental Protection Agency (EPA) on December 29, 2010. The TMDL addresses dissolved oxygen (D.O.), chlorophyll a and submerged aquatic vegetation (SAV) impairments in the main stem Chesapeake Bay and its tributaries by establishing nonpoint source load allocations (LAs) and point source wasteload allocations (WLAs) for Total Nitrogen (TN), Total Phosphorus (TP) and Total Suspended Solids (TSS) to meet applicable Virginia Water Quality Standards contained in 9VAC25-260-185.

Implementation of the Chesapeake Bay TMDL is currently accomplished in accordance with the Commonwealth of Virginia's Phase I Watershed Implementation Plan (WIP); approved by EPA on December 29, 2010. The approved WIP recognizes the *General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed of Virginia* (9VAC25-820 et seq.) as controlling the nutrient allocations for non-significant Chesapeake Bay dischargers. The approved WIP states that for non-significant municipal facilities, nutrient WLAs are to be consistent with Code of Virginia procedures, which set baseline WLAs at 2005 permitted design capacity nutrient load levels. In accordance with the WIP, TN and TP WLAs for non-significant facilities are considered aggregate allocations and will not be included in individual permits. The WIP also considers TSS WLAs for non-significant facilities to be aggregate allocations; however, TSS limits are to be included in individual VPDES permits in conformance with the technology-based requirements found in the Clean Water Act. Furthermore, the WIP recognizes that so long as the aggregated TSS permitted loads for all dischargers is less than the aggregated TSS load in the WIP, the individual permit will be consistent with the TMDL.

40 CFR 122.44(d)(1)(vii)(B) requires permits to be written with effluent limits necessary to meet water quality standards and to be consistent with the assumptions and requirements of applicable WLAs. This facility is classified as a non-significant Chesapeake Bay discharger and has not made application for a new or expanded discharge since 2005. It is therefore covered by rule under the 9VAC25-820 regulation. In accordance with the WIP, TN and TP load limits are not included in this individual permit, but are consistent with the TMDL because the current nutrient loads are in conformance with the facility's 2005 permitted design capacity loads. This individual permit includes weekly average TSS limits of 30 mg/L that are in conformance with technology-based requirements and, in turn, are consistent with the Chesapeake Bay TMDL.

In addition, this individual permit contains limits for ammonia, BOD<sub>5</sub> and D.O. which provide protection of instream D.O. concentrations of at least 5.0 mg/L. Furthermore, implementation of the full Chesapeake Bay WIP, including GP reductions combined with actions proposed in other source sectors, is expected to adequately address ambient conditions such that the proposed effluent limits found within this individual permit are consistent with the Chesapeake Bay TMDL and will not cause an impairment or observed violation of the standards for D.O., chlorophyll a or SAV as required by 9VAC25-260-185.

The planning statement is found in Attachment 4.

c. Receiving Stream Water Quality Criteria

Part IX of 9VAC25-260(360-550) designates classes and special standards applicable to defined Virginia river basins and sections. The receiving stream, Little River, is located within Section 9 of the Potomac River Basin and classified as Class III water.

At all times, Class III waters must achieve a dissolved oxygen (D.O.) of 4.0 mg/L or greater, a daily average D.O. of 5.0 mg/L or greater, a temperature that does not exceed 32° C and maintain a pH of 6.0 – 9.0 standard units (S.U.).

The Freshwater Water Quality/Wasteload Allocation Analysis located in Attachment 5 details other water quality criteria applicable to the receiving stream.

Some Water Quality Criteria are dependent on the pH, temperature and total hardness of the receiving stream and/or final effluent.

pH and Temperature for Ammonia Criteria

The fresh water, aquatic life Water Quality Criteria for ammonia is dependent on the instream pH and temperature. Since the effluent may have an impact on the instream values, the pH and temperature values of the effluent must also be considered when determining the ammonia criteria for the receiving stream. The 90th percentile pH and temperature values are utilized because they best represent the critical conditions of the receiving stream.

DEQ Ambient Monitoring data for watershed VAN-A08R from January 1990 through February 2011 was reviewed and the 90<sup>th</sup> percentile values were calculated. These values shall be used in Attachment 5 to determine the ammonia criteria. The 90<sup>th</sup> percentile annual pH is 8.0 S.U and temperature is 23.4°C. The 90<sup>th</sup> percentile wet season pH is 8.0 S.U. and the temperature is 12.7°C. The 10<sup>th</sup> percentile pH is 7.0 S.U.

The facility data reported on the Discharge Monitoring Reports from January 2014 through July 2016 was reviewed. There are no significant changes from the assumptions used for the last two reissuances; therefore, a pH value of 7.5 S.U. shall be carried forward for this reissuance. A default value of 15°C was used for the wet season temperature and 20°C was used for the annual temperature since the temperature data was not readily available.

Hardness Dependent Metals Criteria

The Water Quality Criteria for some metals are dependent on the receiving stream's hardness (expressed as mg/L calcium carbonate). There is no hardness data for this facility. Staff guidance suggests using a default hardness value of 50 mg/L CaCO<sub>3</sub> for streams east of the Blue Ridge. The hardness-dependent metals criteria in Attachment 5 are based on this default value.

DEQ Ambient Monitoring data for watershed VAN-A08R from January 1990 through February 2011 was reviewed and the average Total Hardness value was calculated to be 83.6 mg/L. This value along with the effluent default value shall be used in Attachment 5 to determine the hardness-dependent metals criteria.

Bacteria Criteria

The Virginia Water Quality Standards at 9VAC25-260-170A state that the following criteria shall apply to protect primary recreational uses in surface waters:

*E. coli* per 100 mL of water shall not exceed the following:

	Geometric Mean <sup>1</sup>
Freshwater <i>E. coli</i> (N/100 mL)	126

<sup>1</sup>For a minimum of four weekly samples taken during any calendar month

d. Receiving Stream Special Standards

The State Water Control Board's Water Quality Standards, River Basin Section Tables (9VAC25-260-360, 370 and 380) designates the river basins, sections, classes and special standards for surface waters of the Commonwealth of Virginia. The receiving stream, unnamed tributary to Beaverdam Creek, is located within Section 9 of the Potomac River Basin. This section has not been designated with a special standard.

e. Threatened or Endangered Species

The Virginia DGIF Fish and Wildlife Information System Database was searched on June 14, 2016 for records to determine if there are threatened or endangered species in the vicinity of the discharge. The following threatened or endangered species were identified within a 2 mile radius of the discharge: Green Floater and Yellow Lance. The limits proposed in this draft permit are protective of the Virginia Water Quality Standards and protect the threatened and endangered species found near the discharge. The database search can be found in Attachment 6.

DCR, FWS, and DGIF all requested coordination on this permit. The permit was sent to DCR, FWS, and DGIF and responses were received on August 26, 2016, June 28, 2016 and July 13, 2016, respectively. The responses received from these agencies have been placed in the correspondence file for this reissuance. None objected to the reissuance based on the information provided by the permittee and DEQ.

**16. Antidegradation (9VAC25-260-30):**

All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

Historically, the Little River at the point of discharge has been considered Tier 1. Limits for the discharge were established by determining wasteload allocations which result in attaining and/or maintaining all water quality criteria which apply to the receiving stream, including narrative criteria. These wasteload allocations will provide for the protection and maintenance of all existing uses. This Tier 1 determination shall be carried forward with this reissuance.

The proposed permit limits have been established by determining wasteload allocations which will result in attaining and/or maintaining all water quality criteria which apply to the receiving stream, including narrative criteria. These wasteload allocations will provide for the protection and maintenance of all existing uses.

**17. Effluent Screening, Wasteload Allocation, and Effluent Limitation Development:**

To determine water quality-based effluent limitations for a discharge, the suitability of data must first be determined. Data is suitable for analysis if one or more representative data points are equal to or above the quantification level ("QL") and the data represent the exact pollutant being evaluated.

Next, the appropriate Water Quality Standards are determined for the pollutants in the effluent. Then, the Wasteload Allocations (WLA) are calculated. The WLA values are then compared with available effluent data to determine the need for effluent limitations. Effluent limitations are needed if the 97th percentile of the daily effluent concentration values is greater than the acute wasteload allocation or if the 97th percentile of the four-day average effluent concentration values is greater than the chronic wasteload allocation. Effluent limitations are then calculated on the most limiting WLA, the required sampling frequency, and statistical characteristics of the effluent data.

a. Effluent Screening

Effluent data obtained from the permit application and the Discharge Monitoring Reports (DMRs) submitted during the last permitting term has been reviewed and determined to be suitable for evaluation. The following pollutants require a wasteload allocation analysis: Ammonia as N.

b. Mixing Zones and Wasteload Allocations (WLAs)

Wasteload allocations (WLAs) are calculated for those parameters in the effluent with the reasonable potential to cause an exceedance of water quality criteria. The basic calculation for establishing a WLA is the steady state complete mix equation:

$$WLA = \frac{Co [ Qe + ( f ) ( Qs ) ] - [ ( Cs ) ( f ) ( Qs ) ]}{Qe}$$

Where:	WLA	=	Wasteload allocation
	Co	=	In-stream water quality criteria
	Qe	=	Design flow
	f	=	Decimal fraction of critical flow from mixing evaluation
	Qs	=	Critical receiving stream flow (1Q10 for acute aquatic life criteria; 7Q10 for chronic aquatic life criteria; 30Q10 for ammonia criteria; harmonic mean for carcinogen-human health criteria; and 30Q5 for non-carcinogen human health criteria)
	Cs	=	Mean background concentration of parameter in the receiving stream.

The Water Quality Standards contain two distinct mixing zone requirements. The first requirement is general in nature and requires the "use of mixing zone concepts in evaluating permit limits for acute and chronic standards in 9VAC25-260-140.B". The second requirement is specific and establishes special restrictions for regulatory mixing zones "established by the Board".

The Department of Environmental Quality uses a simplified mixing model to estimate the amount of mixing of a discharge with the receiving stream within specified acute and chronic exposure periods. The simplified model contains the following assumptions and approximations:

- The effluent enters the stream from the bank, either via a pipe, channel or ditch.
- The effluent velocity isn't significantly greater (no more than 1 - 2 ft/sec greater) than the stream velocity.
- The receiving stream is much wider than its depth (width at least ten times the depth).
- Diffusive mixing in the longitudinal direction (lengthwise) is insignificant compared with advective transport (flow).
- Complete vertical mixing occurs instantaneously at the discharge point. This is assumed since the stream depth is much smaller than the stream width.
- Lateral mixing (across the width) is a linear function of distance downstream.
- The effluent is neutrally buoyant (e.g. the effluent discharge temperature and salinity are not significantly different from the stream's ambient temperature and salinity).
- Complete mix is determined as the point downstream where the variation in concentration is 20% or less across the width and depth of the stream.
- The velocity of passing and drifting organisms is assumed equal to the stream velocity.

If it is suitably demonstrated that a reasonable potential for lethality or chronic impacts within the physical mixing area doesn't exist, then the basic complete mix equation, with 100% of the applicable stream flow, is appropriate. If the mixing analysis determines there is a potential for lethality or chronic impacts within the physical mixing area, then the proportion of stream flow that has mixed with the effluent over the allowed exposure time is used in the basic complete mix equation. As such, the wasteload allocation equation is modified to account for the decimal fraction of critical flow (f).

Staff derived wasteload allocations where parameters are reasonably expected to be present in an effluent (e.g., total residual chlorine where chlorine is used as a means of disinfection) and where effluent data indicate the pollutant is present in the discharge above quantifiable levels. With regard to the Outfall 001 discharge, ammonia as N is likely present since this is a WWTP treating sewage. As such, Attachment 5 details the mixing analysis results and WLA derivations for these pollutants.

c. Effluent Limitations, Outfall 001 – Toxic Pollutants

9VAC25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Those parameters with WLAs that are near effluent concentrations are evaluated for limits.

The VPDES Permit Regulation at 9VAC25-31-230.D requires that monthly and weekly average limitations be imposed for continuous discharges from POTWs and monthly average and daily maximum limitations be imposed for all other continuous non-POTW discharges.

1) Ammonia as N

Staff reevaluated the need for ammonia as N limitations. Staff used the values presented in Section 15 of the Fact Sheet to determine the ammonia water quality criteria and wasteload allocations (WLAs). DEQ guidance suggests using a sole data point of 9.0 mg/L for discharges containing domestic sewage to ensure the evaluation adequately addresses the potential for ammonia to be present in the discharge containing domestic sewage. The current evaluation (Attachment 7) demonstrates that no limits are necessary for this discharge.

The Environmental Protection Agency (EPA) finalized new, more stringent ammonia criteria in August 2013; possibly resulting in significant reductions in ammonia effluent limitations. It is staff's professional judgment that the incorporation of those criteria into the Virginia Water Quality Standards is forthcoming. This and many other facilities may be required to comply with these new criteria during their next respective permit terms. The ammonia criteria will be revisited during the next reissuance.

d. Effluent Limitations and Monitoring, Outfall 001 – Conventional and Non-Conventional Pollutants

No changes to dissolved oxygen (D.O.), biochemical oxygen demand-5 day (BOD<sub>5</sub>), total suspended solids (TSS), *E. coli*, and pH limitations are proposed.

The BOD<sub>5</sub> and TSS limitations are based on the Federal Secondary Treatment Standards at 40 CFR Part 133 and the VPDES Permit Regulation at 9VAC25-31-30.

pH and dissolved oxygen limitations are set at the water quality criteria.

*E. coli* limitations are in accordance with the Water Quality Standards 9VAC25-260-170.

e. Effluent Annual Average Limitations and Monitoring, Outfall 001 – Nutrients

As discussed in Section 15, significant portions of the Chesapeake Bay and its tributaries are listed as impaired with nutrient enrichment cited as one of the primary causes. Virginia has committed to protecting and restoring the Bay and its tributaries. Only concentration limits are now found in the individual VPDES permit when the facility installs nutrient removal technology. The basis for the concentration limits is 9VAC25-40 – *Regulation for Nutrient Enriched Waters and Dischargers within the Chesapeake Bay Watershed* which requires new or expanding discharges with design flows of  $\geq 0.04$  MGD to treat for TN and TP to either BNR (Biological Nutrient Removal) levels (TN = 8 mg/L; TP = 1.0 mg/L) or SOA (State of the Art) levels (TN = 3.0 mg/L and TP = 0.3 mg/L).

Annual monitoring for Nitrates + Nitrites, Total Kjeldahl Nitrogen, Total Nitrogen, and Total Phosphorus are included in this permit. The monitoring is needed to protect the Chesapeake Bay Water Quality Standards and verify assumptions made while developing the Watershed Implementation Plan (WIP) for the Chesapeake Bay TMDL.

f. Effluent Limitations and Monitoring Summary

The effluent limitations are presented in Section 19. Limits were established for Biochemical Oxygen Demand-5 day (BOD<sub>5</sub>), Total Suspended Solids (TSS), pH, Dissolved Oxygen (D.O.), and *E. coli*. Monitoring is included for Flow, Total Kjeldahl Nitrogen (TKN), Nitrates+Nitrites, Influent BOD<sub>5</sub>, Influent TSS, Total Nitrogen, and Total Phosphorus.

The mass loading (kg/d) for monthly and weekly averages were calculated by multiplying the concentration values (mg/L), with the flow values (in MGD) and then a conversion factor of 3.785.

Sample Type and Frequency are in accordance with the recommendations in the VPDES Permit Manual.

The VPDES Permit Regulation at 9VAC25-31-30 and 40 CFR Part 133 require that the facility achieve at least 85% removal for BOD and TSS (or 65% for equivalent to secondary). This permit requires influent BOD<sub>5</sub> and TSS monitoring on an annual basis to demonstrate 85% removal.



## VPDES PERMIT PROGRAM FACT SHEET

VA0089133  
PAGE 9 of 11**18. Antibacksliding:**

All limits in this permit are at least as stringent as those previously established. Backsliding does not apply to this reissuance.

**19. Effluent Limitations/Monitoring Requirements:**

Design flow is 0.015 MGD.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS						MONITORING REQUIREMENTS	
		Monthly Average		Weekly Average		Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL		NA		NA	NL	1/D	Estimate
pH	1	NA		NA		6.0 S.U.	9.0 S.U.	1/D	Grab
BOD <sub>5</sub>	1,3	30 mg/L	1.7 kg/day	45 mg/L	2.6 kg/day	NA	NA	1/M	Grab
Total Suspended Solids (TSS)	2,3	30 mg/L	1.7 kg/day	45 mg/L	2.6 kg/day	NA	NA	1/M	Grab
Dissolved Oxygen (DO)	1	NA		NA		5.0 mg/L	NA	1/D	Grab
<i>E. coli</i> (Geometric Mean) <sup>a</sup>	1,6,7	126 n/100mL		NA		NA	NA	1/W	Grab
Total Kjeldahl Nitrogen (TKN)	4,5	NL mg/L		NA		NA	NA	1/YR	Grab
Nitrate+Nitrite, as N	4,5	NL mg/L		NA		NA	NA	1/YR	Grab
Total Nitrogen <sup>b</sup>	4,5	NL mg/L		NA		NA	NA	1/YR	Calculated
Total Phosphorus	4,5	NL mg/L		NA		NA	NA	1/YR	Grab
Influent BOD <sub>5</sub> <sup>c</sup>	3	NL mg/L		NA		NA	NA	1/YR	Grab
Influent TSS <sup>c</sup>	3	NL mg/L		NA		NA	NA	1/YR	Grab

The basis for the limitations codes are:

- |  |   |   |
|--|---|---|
| 1. Water Quality Standards                     | <i>MGD</i> = Million gallons per day.     | <i>1/D</i> = Once every day.            |
| 2. Professional Judgment                       | <i>NA</i> = Not applicable.               | <i>1/W</i> = Once per week.             |
| 3. Federal Effluent Guidelines 40 CFR Part 133 | <i>NL</i> = No limit; monitor and report. | <i>1/M</i> = Once every month.          |
| 4. GM 14-2011                                  | <i>S.U.</i> = Standard units.             | <i>1/YR</i> = Once every calendar year. |
| 5. Chesapeake Bay TMDL/WP                      |   |   |
| 6. Goose Creek Bacteria TMDL                   |   |   |
| 7. DEQ Disinfection Guidance                   |   |   |

Grab = An individual sample collected over a period of time not to exceed 15 minutes.

Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.

a. Samples shall be collected between 10:00 a.m. and 4:00 p.m.

b. Total Nitrogen = Sum of TKN plus Nitrate+Nitrite.

c. At least 85% removal for BOD and TSS shall be attained for this effluent.

**20. Other Permit Requirements:**

- a. Part I.B. of the Permit Contains Quantification Levels and Compliance Reporting Instructions.

9VAC25-31-190.L.4.c. requires an arithmetic mean for measurement averaging and 9VAC25-31-220.D requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an instream excursion of water quality criteria. Specific analytical methodologies for toxics are listed in this permit section as well as quantification levels (QLs) necessary to demonstrate compliance with applicable permit limitations or for use in future evaluations to determine if the pollutant has reasonable potential to cause or contribute to a violation. Required averaging methodologies are also specified.

**21. Other Special Conditions:**

- a. 95% Capacity Reopener. The VPDES Permit Regulation at 9VAC25-31-200.B.4 requires all POTWs and PVOTWs develop and submit a plan of action to DEQ when the monthly average influent flow to their sewage treatment plant reaches 95% or more of the design capacity authorized in the permit for each month of any three consecutive month period. This facility is a POTW.
- b. Indirect Dischargers. Required by VPDES Permit Regulation, 9VAC25-31-200.B.1 and B.2 for POTWs and PVOTWs that receive waste from someone other than the owner of the treatment works.
- c. O&M Manual Requirement. Required by Code of Virginia §62.1-44.19; Sewage Collection and Treatment Regulations, 9VAC25-790; VPDES Permit Regulation, 9VAC25-31-190.E. The permittee shall maintain a current Operations and Maintenance (O&M) Manual. The permittee shall operate the treatment works in accordance with the O&M Manual and shall make the O&M Manual available to Department personnel for review upon request. Any changes in the practices and procedures followed by the permittee shall be documented in the O&M Manual within 90 days of the effective date of the changes. Non-compliance with the O&M Manual shall be deemed a violation of the permit.
- d. CTC, CTO Requirement. The Code of Virginia § 62.1-44.19; Sewage Collection and Treatment Regulations, 9VAC25-790 requires that all treatment works treating wastewater obtain a Certificate to Construct (CTC) prior to commencing construction and to obtain a Certificate to Operate (CTO) prior to commencing operation of the treatment works.
- e. Licensed Operator Requirement. The Code of Virginia at §54.1-2300 et seq. and the VPDES Permit Regulation at 9VAC25-31-200.C., and by the Board for Waterworks and Wastewater Works Operators and Onsite Sewage System Professionals Regulations (18VAC160-20-10 et seq.) requires licensure of operators. This facility requires a Class IV operator.
- f. Reliability Class. The Sewage Collection and Treatment Regulations at 9VAC25-790 require sewage treatment works to achieve a certain level of reliability in order to protect water quality and public health consequences in the event of component or system failure. Reliability means a measure of the ability of the treatment works to perform its designated function without failure or interruption of service. The facility is required to meet a reliability Class of I.
- g. Water Quality Criteria Reopener. The VPDES Permit Regulation at 9VAC25-31-220.D requires establishment of effluent limitations to ensure attainment/maintenance of receiving stream water quality criteria. Should effluent monitoring indicate the need for any water quality-based limitations, this permit may be modified or alternatively revoked and reissued to incorporate appropriate limitations.
- h. Sludge Reopener. The VPDES Permit Regulation at 9VAC25-31-220.C requires all permits issued to treatment works treating domestic sewage (including sludge-only facilities) include a reopener clause allowing incorporation of any applicable standard for sewage sludge use or disposal promulgated under Section 405(d) of the CWA. The facility includes a sewage treatment works.
- i. Sludge Use and Disposal. The VPDES Permit Regulation at 9VAC25-31-100.P; 220.B.2, and 420 through 720 and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on their sludge use and disposal practices and to meet specified standards for sludge use and disposal. The facility includes a treatment works treating domestic sewage.
- j. Nutrient Reopener. 9VAC25-40-70.A. authorizes DEQ to include technology-based annual concentration limits in the permits of facilities that have installed nutrient control equipment, whether by new construction, expansion or upgrade. 9VAC25-31-390.A. authorizes DEQ to modify VPDES permits to promulgate amended water quality standards.

- k. Total Maximum Daily Load (TMDL) Reopener. Section 303(d) of the Clean Water Act requires that Total Maximum Daily Loads (TMDLs) be developed for streams listed as impaired. This special condition is to allow the permit to be reopened if necessary to bring it into compliance with any applicable TMDL approved for the receiving stream.

**22. Permit Section Part II.**

Required by VPDES Regulation 9VAC25-31-190, Part II of the permit contains standard conditions that appear in all VPDES Permits. In general, these standard conditions address the responsibilities of the permittee, reporting requirements, testing procedures and records retention.

**23. Changes to the Permit from the Previously Issued Permit:**

- a. Special Conditions:  
No changes to the special conditions are proposed.
- b. Monitoring and Effluent Limitations:  
Annual monitoring for Total Nitrogen, Total Phosphorus, Nitrate+Nitrite, and Total Kjeldahl Nitrogen were added to the effluent monitoring.

**24. Variances/Alternate Limits or Conditions:**

Not applicable.

**25. Public Notice Information:**

First Public Notice Date:

Second Public Notice Date:

Public Notice Information is required by 9VAC25-31-280 B. All pertinent information is on file and may be inspected and copied by contacting the: DEQ Northern Regional Office; 13901 Crown Court; Woodbridge, VA 22193; Telephone No. 703-583-3834, [alison.thompson@deq.virginia.gov](mailto:alison.thompson@deq.virginia.gov). See Attachment 8 for a copy of the public notice document.

Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address and telephone number of the writer and of all persons represented by the commenter/requester, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing, including another comment period, if public response is significant and there are substantial, disputed issues relevant to the permit. Requests for public hearings shall state 1) the reason why a hearing is requested; 2) a brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit; and 3) specific references, where possible, to terms and conditions of the permit with suggested revisions. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given. The public may request an electronic copy of the draft permit and fact sheet or review the draft permit and application at the DEQ Northern Regional Office by appointment.

**26. Additional Comments:**

Previous Board Action(s):                      There have been no recent board actions.

Staff Comments:                                  No comments.

State/Federal Agency Comments:              No comments.

Public Comments:

Owner Comments:

Attachments to the Fact Sheet for VA0089133  
Aldie WWTP

Attachment 1	Flow Frequency Determination
Attachment 2	Topographic Map
Attachment 3	Facility Inspection from September 17, 2009
Attachment 4	Planning Statement
Attachment 5	Water Quality Criteria and Wasteload Allocation Determinations
Attachment 6	DGIF Database Search Results
Attachment 7	Statistical Evaluation for the Effluent Ammonia Limitations
Attachment 8	Public Notice

## Attachment 1

September 6, 2016  
**MEMORANDUM**

TO: VPDES Reissuance File VA0089133

FROM: Alison Thompson

SUBJECT: Flow Frequency Determination of VPDES Permit No. VA0089133  
Aldie WWTP

**COPIES:**

The reissuance of the VPDES permit for the Aldie WWTP requires an updated Flow Frequency determination in order to establish appropriate wasteload allocations for permit limit determination. The last determination was done in April 2000. There is a gaging station on Goose Creek near Leesburg, Virginia. The gaging station (#01644000) has a drainage area of 332 sq. mi. The drainage area at the outfall is approximately 41.4 sq.mi. The flows for the outfall location shall be determined using values at the Goose Creek gaging station at Leesburg, Virginia, and adjusting them by proportional drainage areas.

**Goose Creek near Leesburg, VA (#01644000)**

Drainage area	=	332 sq. mi.
1Q10	=	1.4 cfs
7Q10	=	1.8 cfs
30Q5	=	6.9 cfs
30Q10	=	3.7 cfs
High flow 30Q10	=	38 cfs
High flow 1Q10	=	15 cfs
High flow 7Q10	=	21 cfs
HM	=	33 cfs

**Little River at the discharge point for Outfall 001**

Drainage area	=	41.4 sq. mi.	
1Q10	=	0.17 cfs	0.11 MGD
7Q10	=	0.22 cfs	0.14 MGD
30Q5	=	0.86 cfs	0.56 MGD
30Q10	=	0.46 cfs	0.30 MGD
High flow 30Q10	=	4.7 cfs	3.0 MGD
High flow 1Q10	=	1.87 cfs	1.2 MGD
High flow 7Q10	=	2.6 cfs	1.7 MGD
HM	=	4.1 cfs	2.6 MGD

The high flow months are December - May

## Attachment 2

03/22/2016



State Map

ArcGIS Online Gray

ArcGIS Online Imagery

ArcGIS Online Street

Business Layers (SAP objects)
Reference Layers (external GIS)
Map Bookmarks
Redlining
Print



Interchange Turnpike

John Mosby Highway  
SR 804

John Mosby Highway

Ta Race Road

John Mosby Highway

US 50

Aldie WWTP  
39506 John Mosby HWY  
Aldie VA 20105  
Outfall 001  
Receiving Water - Little River  
Watershed - Middle Potomac-Catoctin  
State River Basin - Potomac River  
Latitude: 38 degrees 58" 39'  
Longitude: 77 degrees 38" 14'  
USGS: 8 Digit HUC:02070008

US 50

John Mosby Highway

US 50

New Mountain Road

Todd Hill Lane

400 Meters

1000 Feet

© OpenStreetMap contributors





## Attachment 3



# *COMMONWEALTH of VIRGINIA*

## *DEPARTMENT OF ENVIRONMENTAL QUALITY*

### NORTHERN REGIONAL OFFICE

13901 Crown Court, Woodbridge, Virginia 22193

(703) 583-3800 Fax (703) 583-3821

[www.deq.virginia.gov](http://www.deq.virginia.gov)

L. Preston Bryant, Jr.  
Secretary of Natural Resources

David K. Paylor  
Director

Thomas A. Faha  
Regional Director

October 2, 2009

Mr. Todd Danielson  
Manager of Community Systems  
Loudoun Water  
P.O. Box 4000  
Ashburn, VA 20146

**Re: Aldie WWTP – permit #VA0089133**

Dear Owner:

Enclosed are copies of the technical and laboratory inspection reports generated from observations made while performing a Facility Technical Inspection at the Village of Aldie Sewage Treatment Plant (STP) on September 17, 2009. The compliance staff would like to thank Les Morefield and Allen Clemens for their time and assistance during the inspection.

Summaries for both the technical and laboratory inspections are enclosed. The facility had Deficiencies for the laboratory inspection. Please note the requirements and recommendations addressed in the technical summary, particularly in regard to the UV intensity meters. Please submit in writing a progress report to this office by **November 5, 2009** for the items addressed. Your response may be sent either via the US Postal Service or electronically, via E-mail. If you choose to send your response electronically, we recommend sending it as an Acrobat PDF or in a Word-compatible, write-protected format. Additional inspections may be conducted to confirm that the facility is in compliance with permit requirements.

If you have any questions or comments concerning this report, please feel free to contact me at the Northern Regional Office (NRO) at (703) 583-3882 or by E-mail at Sharon.Allen@deq.virginia.gov.

Sincerely,

A handwritten signature in black ink that reads "Sharon Allen". The signature is written in a cursive, flowing style.

Sharon Allen  
Environmental Specialist II  
Water Compliance Inspector

cc: Permits / DMR File

Electronic copy sent:

Compliance Manager, Compliance Auditor – DEQ  
Les Morefield – Community Systems Supervisor, Loudoun Water

**DEQ  
WASTEWATER FACILITY INSPECTION REPORT  
PREFACE**

VPDES/State Certification No.	(RE) Issuance Date	Amendment Date	Expiration Date																								
<b>VA0089133</b>	<b>July 28, 2006</b>		<b>July 27, 2011</b>																								
Facility Name	Address		Telephone Number																								
<b>Aldie Wastewater Treatment Plant</b>	<b>39506 John Mosby Highway Aldie, VA 20105</b>		<b>571-291-7700</b>																								
Owner Name	Address		Telephone Number																								
<b>Loudoun Water</b>	<b>P.O. Box 4000 Ashburn, VA 20146</b>		<b>571-291-7700</b>																								
Responsible Official	Title		Telephone Number																								
<b>Todd Danielson</b>	<b>Manager of Community Systems</b>		<b>571- 291-7835</b>																								
Responsible Operator	Operator Cert. Class/number		Telephone Number																								
<b>David Farrell</b>	<b>Class VI; 1912 000198</b>		<b>571-291-7700</b>																								
TYPE OF FACILITY:																											
<table border="1" style="width: 100%;"> <tr> <th colspan="4">DOMESTIC</th> <th colspan="4">INDUSTRIAL</th> </tr> <tr> <td>Federal</td> <td></td> <td>Major</td> <td></td> <td>Major</td> <td></td> <td>Primary</td> <td></td> </tr> <tr> <td>Non-federal</td> <td><b>X</b></td> <td>Minor</td> <td><b>X</b></td> <td>Minor</td> <td></td> <td>Secondary</td> <td></td> </tr> </table>				DOMESTIC				INDUSTRIAL				Federal		Major		Major		Primary		Non-federal	<b>X</b>	Minor	<b>X</b>	Minor		Secondary	
DOMESTIC				INDUSTRIAL																							
Federal		Major		Major		Primary																					
Non-federal	<b>X</b>	Minor	<b>X</b>	Minor		Secondary																					
INFLUENT CHARACTERISTICS:																											
		Flow	<b>.015 MGD</b>																								
		Population Served	<b>~ 100</b>																								
		Connections Served	<b>37</b>																								
		BOD <sub>5</sub>	<b>260</b>																								
		TSS	<b>110</b>																								
DESIGN:																											
EFFLUENT LIMITS: SPECIFY UNITS																											
Parameter	Min.	Avg.	Max.	Parameter	Min.	Avg.	Max.																				
<b>pH</b>	<b>6.0</b>		<b>9.0</b>	<b>DO</b>	<b>5.0</b>																						
<b>BOD5</b>		<b>30</b>	<b>45</b>	<b>TSS</b>		<b>30</b>	<b>45</b>																				
<b>E. coli n/cml</b>		<b>126</b>																									
		Receiving Stream	<b>Little River</b>																								
		Basin	<b>Potomac River</b>																								
		Discharge Point (LAT)	<b>38° 58' 39"</b>																								
		Discharge Point (LONG)	<b>77° 38' 14"</b>																								

REV 5/00      DEQ  
**WASTEWATER FACILITY  
 INSPECTION REPORT  
 PART 1**

Inspection date: **September 17, 2009**Date Form Completed: **October 2, 2009**Inspection by: **Sharon Allen**agency: **DEQ NRO**Time spent: **20 Hrs**Announced: **No**Reviewed by:  10/2/09Scheduled: **Yes**Present at inspection: **Les Morefield, Allen Clemens – Loudoun Water**

TYPE OF FACILITY:

**Domestic****Industrial**
☐ Federal      ☐ Major  
☒ Nonfederal      ☒ Minor

☐ Major      ☐ Primary  
☐ Minor      ☐ Secondary

Type of inspection:

☒ Routine  
☐ Compliance/Assistance/Complaint  
☐ Reinspection

 Date of last inspection: **9/13/06**  
 Agency: **DEQ NRO**
Population served: approx. **104**Connections served: approx. **37**Last month average: (Influent) **November 2008:**

BOD <sub>5</sub>	<b>260</b>	mg/L	TSS	<b>110</b>	mg/L
------------------	------------	------	-----	------------	------

Last month average: (Effluent) **August 2009:**

Flow:	<b>.0023</b>	MGD	pH:	<b>7.5</b>	s.u.	DO	<b>7.4</b>	mg/L
BOD <sub>5</sub>	<b>&lt; QL</b>	mg/L	TSS	<b>9.1</b>	mg/L	E. coli	<b>&gt;12</b>	n/cml

**Note: One E coli sample analyzed in August had a result of > 1600 n/cml; two other samples were collected for this month, both of which had results if < 1 n/cml. The geometric mean of these three numbers was 12 n/cml. However, since one sample result exceeded the highest quantitative number, the >sign was included to indicate that a quantitative number was not obtained for the month.**

Quarter average: (Effluent) **June, July, August 2009**

Flow:	<b>0.0031</b>	MGD	pH:	<b>7.3</b>	s.u.	DO	<b>7.2</b>	mg/L
BOD <sub>5</sub>	<b>1.7</b>	mg/L	TSS	<b>8.9</b>	mg/L	E. coli	<b>&gt;6.5</b>	n/cml

DATA VERIFIED IN PREFACE

☐ Updated    ☐ No changes

Has there been any new construction?

☐ Yes      ☒ No

If yes, were plans and specifications approved?

☐ Yes      ☐ No      ☒ NADEQ approval date: **NA**

**(A) PLANT OPERATION AND MAINTENANCE**

1. Class and number of licensed operators: I \_\_\_ II \_\_\_ III \_\_\_ IV X Trainee
2. Hours per day plant is manned: **2-3 hrs per day**
3. Describe adequacy of staffing. [ ] Good [X] Average [ ] Poor
4. Does the plant have an established program for training personnel? [X] Yes [ ] No
5. Describe the adequacy of the training program. [ ] Good [X] Average [ ] Poor
6. Are preventive maintenance tasks scheduled? [X] Yes [ ] No
7. Describe the adequacy of maintenance. [X] Good [ ] Average [ ] Poor\*
8. Does the plant experience any organic/hydraulic overloading?  
If yes, identify cause and impact on plant: [ ] Yes [X] No
9. Any bypassing since last inspection? [ ] Yes [X] No
10. Is the standby electric generator operational? [ ] Yes [ ] No\* [X] NA
11. Is the STP alarm system operational? [ ] Yes [ ] No\* [X] NA
12. How often is the standby generator exercised? **NA**  
Power Transfer Switch? **NA**  
Alarm System? **NA**
13. When was the cross connection control device last tested on the potable water service? **5/21/09**
14. Is sludge being disposed in accordance with the approved sludge disposal plan?  
[X] Yes [ ] No [ ] NA
15. Is septage received by the facility? [ ] Yes [X] No  
Is septage loading controlled? [ ] Yes [ ] No [X] NA  
Are records maintained? [ ] Yes [ ] No [X] NA
16. Overall appearance of facility: [X] Good [ ] Average [ ] Poor

Comments:

- 14. The Sludge Management Plant (SMP) may have to be updated if sludge is now being hauled to Broad Run WRF instead of the Broad Run Interceptor.**

**(B) PLANT RECORDS**

1. Which of the following records does the plant maintain?

Operational Logs for each unit process	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Instrument maintenance and calibration	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Mechanical equipment maintenance	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Industrial waste contribution (Municipal Facilities)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> NA

2. What does the operational log contain?

<input checked="" type="checkbox"/> Visual observations	<input checked="" type="checkbox"/> Flow measurement
<input checked="" type="checkbox"/> Laboratory results	<input checked="" type="checkbox"/> Process adjustments
<input type="checkbox"/> Control calculations	<input type="checkbox"/> Other (specify)

Comments:

3. What do the mechanical equipment records contain?

<input checked="" type="checkbox"/> As built plans and specs	<input type="checkbox"/> Spare parts inventory
<input checked="" type="checkbox"/> Manufacturers instructions	<input checked="" type="checkbox"/> Equipment/parts suppliers
<input checked="" type="checkbox"/> Lubrication schedules	<input type="checkbox"/> Other (specify)

Comments:

4. What do the industrial waste contribution records contain?
- NA**
- 
- (Municipal Only)

<input type="checkbox"/> Waste characteristics	<input type="checkbox"/> Locations and discharge types
<input type="checkbox"/> Impact on plant	<input type="checkbox"/> Other (specify)

Comments:

5. Which of the following records are kept at the plant and available to personnel?

<input checked="" type="checkbox"/> Equipment maintenance records	<input checked="" type="checkbox"/> Operational Log
<input type="checkbox"/> Industrial contributor records	<input checked="" type="checkbox"/> Instrumentation records
<input checked="" type="checkbox"/> Sampling and testing records	

6. Records not normally available to plant personnel and their location:

7. Were the records reviewed during the inspection? ☒ Yes ☐ No
8. Are the records adequate and the O & M Manual current? ☐ Yes ☐ No **See comments**
9. Are the records maintained for the required 3-year time period? ☒ Yes ☐ No

Comments:

- 8. Records on site at the plant were acceptable.**

**The O&M Manual on file at the DEQ's Northern Regional Office is dated March 1997. A letter stating that the O&M manual was accurate was received by the DEQ on September 5, 2009. However, staff should confirm that the O&M manual on site is up to date; in particular, The laboratory section (Section7 ) must reflect the current permit requirements ( e.g.- E. coli rather than fecal coliform) and include the make and model of DO and pH meters and SOPs currently in use.**

**(C) SAMPLING**

1. Do sampling locations appear to be capable of providing representative samples? ☒ Yes ☐ No\*
2. Do sample types correspond to those required by the VPDES permit? ☒ Yes ☐ No\*
3. Do sampling frequencies correspond to those required by the VPDES permit? ☒ Yes ☐ No\*
4. Are composite samples collected in proportion to flow? ☐ Yes ☐ No\* ☒ NA
5. Are composite samples refrigerated during collection? ☐ Yes ☐ No\* ☒ NA
6. Does plant maintain required records of sampling? ☒ Yes ☐ No\*
7. Does plant run operational control tests? ☒ Yes ☐ No

Comments:

**(D) TESTING**

1. Who performs the testing? ☒ Plant ☒ Central Lab ☐ Commercial Lab

Name: **Plant- DO, pH**  
**Raspberry Falls STP lab-- E. coli**  
**Broad Run WRF lab -- BOD<sub>5</sub>, TSS**

**If plant performs any testing, complete 2-4.**

2. What method is used for chlorine analysis? **NA- plant has UV disinfection**
3. Does plant appear to have sufficient equipment to perform required tests? ☒ Yes ☐ No\*
4. Does testing equipment appear to be clean and/or operable? ☒ Yes ☐ No\*

Comments:

**(E) FOR INDUSTRIAL FACILITIES WITH TECHNOLOGY BASED LIMITS ONLY**

1. Is the production process as described in the permit application? (If no, describe changes in comments)  
☐ Yes ☐ No ☒ NA
2. Do products and production rates correspond as provided in the permit application? (If no, list differences)  
☐ Yes ☐ No ☒ NA
3. Has the State been notified of the changes and their impact on plant effluent? Date:  
☐ Yes ☐ No\* ☒ NA

Comments:



## Problems identified at last inspection:

Corrected

Not Corrected

- |    |  |                                     |                          |
|----|--|-------------------------------------|--------------------------|
| 1. | At the time of inspection a tree had fallen, blocking the cleared access path to the outfall; access was obtained through the woods.   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. | The path from the fallen tree to the outfall is becoming overgrown with grass. Mr. Bell noted that the tree was scheduled to be removed and the grass beyond the tree would then be mowed. | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
- 

**SUMMARY 2009****Comments:**

- **The LCD display for the Intensity Meter on the UV system was not functioning a the time of this inspection; the display was flashing 0.0  $\mu$ Ws/cm2. Plant staff have investigated the cause of the malfunction and determined that the sensor was bad and are in the process of ordering a replacement.**
- **The channel from Outfall 001 to the receiving stream has silted in and become grassy over the last several years. Loudoun Water staff is working on digging out the channel and restoring it to its original design.**

**Recommendations for action:**

- **Section 7 of the O&M Manual is out of date. The section should be revised to reflect current laboratory equipment, procedures, and quality control in use at this facility.**
- **The sludge disposal plan should be reviewed and updated if necessary.**

**UNIT PROCESS: Activated Sludge Aeration**

1. Number of units: **1** In operation: **1**
2. Mode of operation: **Extended aeration**
3. Proper flow distribution between units: ☐ Yes ☐ No\* ☒ NA
4. Foam control operational: ☒ Yes ☐ No\* ☐ NA
5. Scum control operational: ☒ Yes ☐ No\* ☐ NA
6. Evidence of following problems:
- |                                   |                               |  |
|-----------------------------------|-------------------------------|--|
| a. dead spots                     | <input type="checkbox"/> Yes* | <input checked="" type="checkbox"/> No |
| b. excessive foam                 | <input type="checkbox"/> Yes* | <input checked="" type="checkbox"/> No |
| c. poor aeration                  | <input type="checkbox"/> Yes* | <input checked="" type="checkbox"/> No |
| d. excessive aeration             | <input type="checkbox"/> Yes* | <input checked="" type="checkbox"/> No |
| e. excessive scum                 | <input type="checkbox"/> Yes* | <input checked="" type="checkbox"/> No |
| f. aeration equipment malfunction | <input type="checkbox"/> Yes* | <input checked="" type="checkbox"/> No |
| g. other (identify in comments)   | <input type="checkbox"/> Yes* | <input checked="" type="checkbox"/> No |
7. Mixed liquor characteristics (as available): July 2009
- |                    |                              |
|--------------------|------------------------------|
| pH:                | <b>7.0 s.u.</b>              |
| MLSS:              | <b>4680 mg/L</b>             |
| DO:                | <b>5.1 mg/L</b>              |
| SDI/SVI:           | <b>85</b>                    |
| Color:             | <b>Dark Brown</b>            |
| Odor:              | <b>earthy</b>                |
| Settleability:     | <b>520 ml/L @ 30 minutes</b> |
| Others (identify): |                              |
8. Return/waste sludge:
- Return Rate: **not measured**
  - Waste Rate: **not measured**
  - Frequency of Wasting: **As needed based on process control tests; generally a couple of minutes per week.**
9. Aeration system control: ☒ Time Clock ☐ Manual ☐ Continuous ☐ Other (explain)
10. Effluent control devices working properly (oxidation ditches): ☐ Yes ☐ No\* ☒ NA
11. General condition: ☒ Good ☐ Fair ☐ Poor

## Comments:

**9. One blower run per week, alternated manually**

- Each house/building connected has a grinder pump to chop up large items prior to delivery to STP. Influent pipe goes directly into the aeration basin- end usually under water. Have to pump the tank down in order to uncover and collect the annual TSS/BOD5 influent sample.
- Flow from each grinder pump is intermittent. Loudoun Water is investigating the option of adding treatment in the collection system to help prevent water from turning septic before it is delivered to the STP.
- The RAS line broke in June 2007, resulting in a spill of clarifier solids to the ground around the plant. The broken coupling was repaired and the area was properly cleaned up; the spill did not affect waters of the State. There have not been any problems with the line since.

**UNIT PROCESS: Sedimentation**[ ] Primary    **[X]** Secondary    [ ] Tertiary

1. Number of units:                      **1**                      In operation:    **1**
2. Proper flow distribution between units:                      [ ] Yes                      [ ] No\*                      **[X]** NA
3. Signs of short circuiting and/or overloads:                      [ ] Yes                      **[X]** No
4. Effluent weirs level:                      **[X]** Yes                      [ ] No\*
- Clean:                      **[X]** Yes                      [ ] No\*
5. Scum collection system working properly:                      **[X]** Yes                      [ ] No\*                      [ ] NA
6. Sludge collection system working properly:                      **[X]** Yes                      [ ] No\*
7. Influent, effluent baffle systems working properly:                      **[X]** Yes                      [ ] No\*
8. Chemical addition:                      [ ] Yes                      **[X]** No
- Chemicals:                      **NA**
9. Effluent characteristics:
10. General condition:                      **[X]** Good                      [ ] Fair                      [ ] Poor

## Comments:

- **Some of the crossbars holding up the grates over the tank are rusty and may need to be replaced in the future.**

**UNIT PROCESS: Ultraviolet (UV) Disinfection**

1. Number of UV lamps/assemblies: **2** In operation: **1**
2. Type of UV system and design dosage: **Trojan 3000 PTP**
3. Proper flow distribution between units: ☐ Yes ☐ No\* ☒ NA
4. Method of UV intensity monitoring: **Intensity Meters**
5. Adequate ventilation of ballast control boxes: ☒ Yes ☐ No\* ☐ NA
6. Indication of on/off status of all lamps provided: ☒ Yes ☐ No\*
7. Lamp assemblies easily removed for maintenance: ☒ Yes ☐ No\*
8. Records of lamp operating hours and replacement dates provided: ☒ Yes ☐ No\*
9. Routine cleaning system provided: ☒ Yes ☐ No\*  
 Operate properly: ☒ Yes ☐ No\*  
 Frequency of routine cleaning: **Weekly**
10. Lamp energy control system operate properly: ☒ Yes ☐ No\*
11. Date of last system overhaul: **September 22, 2009**
- a. UV unit completely drained ☒ Yes ☐ No\*
- b. all surfaces cleaned ☒ Yes ☐ No\*
- c. UV transmissibility checked ☐ Yes ☒ No\*
- d. output of selected lamps checked ☐ Yes ☒ No\*
- e. output of tested lamps **NA**
- f. total operating hours, oldest lamp/assembly **42220**
- g. number of spare lamps and ballasts available: lamps: **2** ballasts: **1**  
**More of both on order**
12. UV protective eyeglasses provided: ☒ Yes ☐ No\*
13. General condition: ☐ Good ☒ Fair ☐ Poor

Comments:

**8. Hours displayed for the system in use- 42220**

- 4. Current Intensity display flashing 0.0- Les said they can't get it to work properly- they think there is a short in the wiring somewhere. I explained that the DEQ's policy is that if a system has intensity meters, they must be in good condition and in use. These meters are the only method at this point we have of assuring the system is working.**

**On 9-17/18-09 I talked to Les and Charlie and was told that an electrician had been out to check the wires –problem is with the sensor itself. They are in the process of ordering new sensor.**

**Problems with the Intensity Meter were also noted in the inspection report dated 9/13/2006.**

**11. UV bulbs are replaced annually and cleaned weekly.**

**UNIT PROCESS: Post Aeration**

1. Number of units: **1** In operation: **1**
2. Proper flow distribution between units: ☐ Yes ☐ No\* ☒ NA
3. Evidence of following problems:
- |                                 |                               |  |                             |
|---------------------------------|-------------------------------|--|-----------------------------|
| a. dead spots                   | <input type="checkbox"/> Yes* | <input checked="" type="checkbox"/> No |                             |
| b. excessive foam               | <input type="checkbox"/> Yes* | <input checked="" type="checkbox"/> No |                             |
| c. poor aeration                | <input type="checkbox"/> Yes* | <input checked="" type="checkbox"/> No |                             |
| d. mechanical equipment failure | <input type="checkbox"/> Yes* | <input checked="" type="checkbox"/> No | <input type="checkbox"/> NA |
4. How is the aerator controlled? ☐ Time clock ☒ Manual ☐ Continuous ☐ Other\*  
☐ NA
5. What is the current operating schedule? **Continuous**
6. Step weirs level: ☐ Yes ☐ No ☒ NA
7. Effluent D.O. level: **7.6 mg/L @ 21.0 ° C at effluent weir by S. Allen at 1302**
8. General condition: ☒ Good ☐ Fair ☐ Poor

Comments:

**pH= 7.15 s.u. @ 20.9 °C at the effluent weir by S. Allen at 1254.**

**UNIT PROCESS: Flow Measurement**☐ Influent    ☐ Intermediate    ☒ Effluent

1. Type measuring device:    **Ultrasonic**
2. Present reading:    **3099290 (totalizer)**
3. Bypass channel:    ☐ Yes    ☒ No  
Metered:    ☐ Yes    ☐ No    ☒ NA
4. Return flows discharged upstream from meter: ☐ Yes    ☒ No  
Identify:
5. Device operating properly:    ☒ Yes    ☐ No\*
6. Date of last calibration:    **5-7-09**
7. Evidence of following problems:
  - a. obstructions    ☐ Yes\*    ☒ No
  - b. grease    ☐ Yes\*    ☒ No
8. General condition:    ☒ Good    ☐ Fair    ☐ Poor

Comments:

**UNIT PROCESS: Effluent/Plant Outfall**

1. Type Outfall            ☒ Shore based            ☐ Submerged
2. Type if shore based:   ☐ Wingwall            ☐ Headwall    ☒ Rip Rap
3. Flapper valve:            ☐ Yes            ☒ No            ☐ NA
4. Erosion of bank:            ☐ Yes            ☒ No            ☐ NA
5. Effluent plume visible?   ☐ Yes\*            ☒ No
6. Condition of outfall and supporting structures:   ☐ Good            ☒ Fair            ☐ Poor\*
7. Final effluent, evidence of following problems:
  - a. oil sheen            ☐ Yes\*            ☒ No
  - b. grease            ☐ Yes\*            ☒ No
  - c. sludge bar            ☐ Yes\*            ☒ No
  - d. turbid effluent            ☐ Yes\*            ☒ No
  - e. visible foam            ☐ Yes\*            ☒ No
  - f. unusual color            ☐ Yes\*            ☒ No

## Comments:

- **The plant effluent passes over a weir, enters a pipe which discharges to a grated drain, then through a second pipe to discharge to the environment.**
- **The rip rap lined channel to the receiving stream mentioned in the previous inspection report was buried and grassy at the time of this inspection. As of Sept 24<sup>th</sup>, operators were going to dig it up and return to original contours.**

## Attachment 4



To: Alison Thompson  
From: Rebecca Shoemaker

Date: July 13, 2016  
Subject: Planning Statement for Aldie WWTP  
Permit Number: VA0089133

**Information for Outfall 001:**

Discharge Type: Municipal  
Discharge Flow: 0.015 MGD  
Receiving Stream: Little River  
Latitude / Longitude: 38 58 39 77 38 14  
Rivermile: 4.58  
Streamcode: 1aLIV  
Waterbody: VAN-A08R  
6<sup>th</sup> Order HUC: PL13  
Water Quality Standards: Section 9, Class III, No special standards  
Drainage Area: 41.4 square miles

1. Please provide water quality monitoring information for the receiving stream segment. If there is not monitoring information for the receiving stream segment, please provide information on the nearest downstream monitoring station, including how far downstream the monitoring station is from the outfall.

This facility is located on Little River. DEQ Ambient monitoring station 1aLIV004.78 is located on Little River at Route 50, approximately 0.20 mile upstream from Outfall 001. DEQ Ambient monitoring station 1aLIV001.70 is located on Little River at Route 15, approximately 3.0 miles downstream from Outfall 001. The following is the water quality summary for this segment of Little River, as taken from the 2014 Integrated Report:

*Class III, Section 9.*

*DEQ monitoring stations located in this segment of Little River:*

- *ambient water quality monitoring station 1aLIV001.70, at Route 15*
- *ambient water quality monitoring station 1aLIV004.78, at Route 50*

*Biological monitoring finds benthic macroinvertebrate impairments, resulting in an impaired classification for the aquatic life use. A benthic (sediment) TMDL for the Little River watershed has been completed and approved. The recreation and wildlife uses are considered fully supporting. The fish consumption use was not assessed.*

2. Does this facility discharge to a stream segment on the 303(d) list? If yes, please fill out Table A.

Yes.

**Table A. 303(d) Impairment and TMDL information for the receiving stream segment**

Waterbody Name	Impaired Use	Cause	Year first Listed as Impaired	TMDL completed	WLA	Basis for WLA
<b>Impairment Information in the 2014 Integrated Report</b>						
Little River	Aquatic Life	Benthic Macroinvertebrates	1998	Goose Creek and Little River Sediment TMDL 4/26/2004	0.7 tons sediment/year*	TSS concentration 30 mg/L --- 0.015 MGD

\*This facility was assigned a total WLA of 3.5 tons/year in the Benthic TMDL for the Goose Creek and Little River watersheds. This total WLA was calculated based upon the permitted maximum average concentration for TSS (mg/L) and an assumption of the facility operating at five times the design flow. The factor of five for the design flow was used as a conservative measure to build in future growth in the watershed. Although the future growth for the watershed was determined by the design flow of each facility within in the watershed, the future growth is available for both new and expanding permits in the watershed. The actual WLA for this facility without including the future growth is 0.7 tons/year.

3. Are there any downstream 303(d) listed impairments that are relevant to this discharge? If yes, please fill out Table B.

Yes.

**Table B. Information on Downstream 303(d) Impairments and TMDLs**

Waterbody Name	Impaired Use	Cause	Year first Listed as Impaired	Distance From Outfall	TMDL completed	WLA	Basis for WLA
<b>Impairment Information in the 2014 Integrated Report</b>							
Goose Creek Reservoir	Fish Consumption	PCBs	2006	11.3 miles	No	---	---
Goose Creek	Recreation	<i>E. coli</i>	2006	12.3 miles	Goose Creek Watershed Bacteria 05/01/2003	4.16E+10 cfu/year fecal coliform bacteria  2.61E+10 cfu/year <i>E. coli</i> bacteria*	200 cfu/100 ml fecal coliform  126 cfu/100 ml <i>E. coli</i> --- 0.015 MGD

\* The WLA is expressed in the Goose Creek Watershed Bacteria TMDL as cfu/year fecal coliform bacteria.

4. Is there monitoring or other conditions that Planning/Assessment needs in the permit?

There is a completed downstream TMDL for the aquatic life use impairment for the Chesapeake Bay. However, the Bay TMDL and the WLAs contained within the TMDL are not addressed in this planning statement.

The Goose Creek Reservoir, which is located approximately 11.3 miles downstream from this facility, is listed with a PCB impairment. In support for PCB TMDL development for the Goose Creek Reservoir, this facility is a candidate for low-level PCB monitoring, based upon its designation as a municipal discharger. Low-level PCB analysis uses EPA Method 1668, which is capable of detecting low-level concentrations for all 209 PCB congeners. DEQ staff has concluded that low-level PCB monitoring is not warranted for this facility as it is a small treatment facility that is not expected to be a source of or discharge PCBs. Based upon this information, this facility will not be requested to monitor for low-level PCBs.

5. Fact Sheet Requirements – Please provide information regarding any drinking water intakes located within a 5 mile radius of the discharge point.

There are no public water supply intakes located within five miles of this discharge.

## Attachment 5

# FRESHWATER WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Aldie WWTP

Permit No.: VA0089133

Receiving Stream: Little River

Version: OWP Guidance Memo 00-2011 (8/24/00)

## Stream Information

Mean Hardness (as CaCO3) =	83.6 mg/L
90% Temperature (Annual) =	23.4 deg C
90% Temperature (Wet season) =	12.7 deg C
90% Maximum pH =	8 SU
10% Maximum pH =	7 SU
Tier Designation (1 or 2) =	1
Public Water Supply (PWS) Y/N? =	n
Trout Present Y/N? =	n
Early Life Stages Present Y/N? =	y

## Stream Flows

1Q10 (Annual) =	0.11 MGD
7Q10 (Annual) =	0.14 MGD
30Q10 (Annual) =	0.3 MGD
1Q10 (Wet season) =	1.2 MGD
30Q10 (Wet season) =	3 MGD
30Q5 =	0.56 MGD
Harmonic Mean =	2.6 MGD

## Mixing Information

Annual - 1Q10 Mix =	7.01 %
- 7Q10 Mix =	100 %
- 30Q10 Mix =	100 %
Wet Season - 1Q10 Mix =	54.92 %
- 30Q10 Mix =	100 %

## Effluent Information

Mean Hardness (as CaCO3) =	50 mg/L
90% Temp (Annual) =	20 deg C
90% Temp (Wet season) =	15 deg C
90% Maximum pH =	7.5 SU
10% Maximum pH =	SU
Discharge Flow =	0.015 MGD

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Acenaphthene	0	--	--	na	9.9E+02	--	--	na	3.8E+04	--	--	--	--	--	--	--	--	--	--	na	3.8E+04
Acrolein	0	--	--	na	9.3E+00	--	--	na	3.6E+02	--	--	--	--	--	--	--	--	--	--	na	3.6E+02
Acrylonitrile <sup>C</sup>	0	--	--	na	2.5E+00	--	--	na	4.4E+02	--	--	--	--	--	--	--	--	--	--	na	4.4E+02
Aldrin <sup>C</sup>	0	3.0E+00	--	na	5.0E-04	4.5E+00	--	na	8.7E-02	--	--	--	--	--	--	--	--	4.5E+00	--	na	8.7E-02
Ammonia-N (mg/l) (Yearly)	0	1.66E+01	1.47E+00	na	--	2.52E+01	3.09E+01	na	--	--	--	--	--	--	--	--	--	2.52E+01	3.09E+01	na	--
Ammonia-N (mg/l) (High Flow)	0	8.74E+00	2.45E+00	na	--	3.93E+02	4.92E+02	na	--	--	--	--	--	--	--	--	--	3.93E+02	4.92E+02	na	--
Anthracene	0	--	--	na	4.0E+04	--	--	na	1.5E+06	--	--	--	--	--	--	--	--	--	--	na	1.5E+06
Antimony	0	--	--	na	6.4E+02	--	--	na	2.5E+04	--	--	--	--	--	--	--	--	--	--	na	2.5E+04
Arsenic	0	3.4E+02	1.5E+02	na	--	5.1E+02	1.6E+03	na	--	--	--	--	--	--	--	--	--	5.1E+02	1.6E+03	na	--
Barium	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Benzene <sup>C</sup>	0	--	--	na	5.1E+02	--	--	na	8.9E+04	--	--	--	--	--	--	--	--	--	--	na	8.9E+04
Benzidine <sup>C</sup>	0	--	--	na	2.0E-03	--	--	na	3.5E-01	--	--	--	--	--	--	--	--	--	--	na	3.5E-01
Benzo (a) anthracene <sup>C</sup>	0	--	--	na	1.8E-01	--	--	na	3.1E+01	--	--	--	--	--	--	--	--	--	--	na	3.1E+01
Benzo (b) fluoranthene <sup>C</sup>	0	--	--	na	1.8E-01	--	--	na	3.1E+01	--	--	--	--	--	--	--	--	--	--	na	3.1E+01
Benzo (k) fluoranthene <sup>C</sup>	0	--	--	na	1.8E-01	--	--	na	3.1E+01	--	--	--	--	--	--	--	--	--	--	na	3.1E+01
Benzo (a) pyrene <sup>C</sup>	0	--	--	na	1.8E-01	--	--	na	3.1E+01	--	--	--	--	--	--	--	--	--	--	na	3.1E+01
Bis(2-Chloroethyl) Ether <sup>C</sup>	0	--	--	na	5.3E+00	--	--	na	9.2E+02	--	--	--	--	--	--	--	--	--	--	na	9.2E+02
Bis(2-Chloroisopropyl) Ether	0	--	--	na	6.5E+04	--	--	na	2.5E+06	--	--	--	--	--	--	--	--	--	--	na	2.5E+06
Bis 2-Ethylhexyl Phthalate <sup>C</sup>	0	--	--	na	2.2E+01	--	--	na	3.8E+03	--	--	--	--	--	--	--	--	--	--	na	3.8E+03
Bromoform <sup>C</sup>	0	--	--	na	1.4E+03	--	--	na	2.4E+05	--	--	--	--	--	--	--	--	--	--	na	2.4E+05
Butylbenzylphthalate	0	--	--	na	1.9E+03	--	--	na	7.3E+04	--	--	--	--	--	--	--	--	--	--	na	7.3E+04
Cadmium	0	2.3E+00	9.6E-01	na	--	3.4E+00	9.9E+00	na	--	--	--	--	--	--	--	--	--	3.4E+00	9.9E+00	na	--
Carbon Tetrachloride <sup>C</sup>	0	--	--	na	1.6E+01	--	--	na	2.8E+03	--	--	--	--	--	--	--	--	--	--	na	2.8E+03
Chlordane <sup>C</sup>	0	2.4E+00	4.3E-03	na	8.1E-03	3.6E+00	4.4E-02	na	1.4E+00	--	--	--	--	--	--	--	--	3.6E+00	4.4E-02	na	1.4E+00
Chloride	0	8.6E+05	2.3E+05	na	--	1.3E+06	2.4E+06	na	--	--	--	--	--	--	--	--	--	1.3E+06	2.4E+06	na	--
TRC	0	1.9E+01	1.1E+01	na	--	2.9E+01	1.1E+02	na	--	--	--	--	--	--	--	--	--	2.9E+01	1.1E+02	na	--
Chlorobenzene	0	--	--	na	1.6E+03	--	--	na	6.1E+04	--	--	--	--	--	--	--	--	--	--	na	6.1E+04

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Chlorodibromomethane <sup>C</sup>	0	--	--	na	1.3E+02	--	--	na	2.3E+04	--	--	--	--	--	--	--	--	--	--	na	2.3E+04
Chloroform	0	--	--	na	1.1E+04	--	--	na	4.2E+05	--	--	--	--	--	--	--	--	--	--	na	4.2E+05
2-Chloronaphthalene	0	--	--	na	1.6E+03	--	--	na	6.1E+04	--	--	--	--	--	--	--	--	--	--	na	6.1E+04
2-Chlorophenol	0	--	--	na	1.5E+02	--	--	na	5.8E+03	--	--	--	--	--	--	--	--	--	--	na	5.8E+03
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	1.3E-01	4.2E-01	na	--	--	--	--	--	--	--	--	--	1.3E-01	4.2E-01	na	--
Chromium III	0	3.8E+02	6.2E+01	na	--	5.8E+02	6.4E+02	na	--	--	--	--	--	--	--	--	--	5.8E+02	6.4E+02	na	--
Chromium VI	0	1.6E+01	1.1E+01	na	--	2.4E+01	1.1E+02	na	--	--	--	--	--	--	--	--	--	2.4E+01	1.1E+02	na	--
Chromium, Total	0	--	--	1.0E+02	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Chrysene <sup>C</sup>	0	--	--	na	1.8E-02	--	--	na	3.1E+00	--	--	--	--	--	--	--	--	--	--	na	3.1E+00
Copper	0	8.5E+00	7.4E+00	na	--	1.3E+01	7.7E+01	na	--	--	--	--	--	--	--	--	--	1.3E+01	7.7E+01	na	--
Cyanide, Free	0	2.2E+01	5.2E+00	na	1.6E+04	3.3E+01	5.4E+01	na	6.1E+05	--	--	--	--	--	--	--	--	3.3E+01	5.4E+01	na	6.1E+05
DDD <sup>C</sup>	0	--	--	na	3.1E-03	--	--	na	5.4E-01	--	--	--	--	--	--	--	--	--	--	na	5.4E-01
DDE <sup>C</sup>	0	--	--	na	2.2E-03	--	--	na	3.8E-01	--	--	--	--	--	--	--	--	--	--	na	3.8E-01
DDT <sup>C</sup>	0	1.1E+00	1.0E-03	na	2.2E-03	1.7E+00	1.0E-02	na	3.8E-01	--	--	--	--	--	--	--	--	1.7E+00	1.0E-02	na	3.8E-01
Demeton	0	--	1.0E-01	na	--	--	1.0E+00	na	--	--	--	--	--	--	--	--	--	--	1.0E+00	na	--
Diazinon	0	1.7E-01	1.7E-01	na	--	2.6E-01	1.8E+00	na	--	--	--	--	--	--	--	--	--	2.6E-01	1.8E+00	na	--
Dibenz(a,h)anthracene <sup>C</sup>	0	--	--	na	1.8E-01	--	--	na	3.1E+01	--	--	--	--	--	--	--	--	--	--	na	3.1E+01
1,2-Dichlorobenzene	0	--	--	na	1.3E+03	--	--	na	5.0E+04	--	--	--	--	--	--	--	--	--	--	na	5.0E+04
1,3-Dichlorobenzene	0	--	--	na	9.6E+02	--	--	na	3.7E+04	--	--	--	--	--	--	--	--	--	--	na	3.7E+04
1,4-Dichlorobenzene	0	--	--	na	1.9E+02	--	--	na	7.3E+03	--	--	--	--	--	--	--	--	--	--	na	7.3E+03
3,3-Dichlorobenzidine <sup>C</sup>	0	--	--	na	2.8E-01	--	--	na	4.9E+01	--	--	--	--	--	--	--	--	--	--	na	4.9E+01
Dichlorobromomethane <sup>C</sup>	0	--	--	na	1.7E+02	--	--	na	3.0E+04	--	--	--	--	--	--	--	--	--	--	na	3.0E+04
1,2-Dichloroethane <sup>C</sup>	0	--	--	na	3.7E+02	--	--	na	6.5E+04	--	--	--	--	--	--	--	--	--	--	na	6.5E+04
1,1-Dichloroethylene	0	--	--	na	7.1E+03	--	--	na	2.7E+05	--	--	--	--	--	--	--	--	--	--	na	2.7E+05
1,2-trans-dichloroethylene	0	--	--	na	1.0E+04	--	--	na	3.8E+05	--	--	--	--	--	--	--	--	--	--	na	3.8E+05
2,4-Dichlorophenol	0	--	--	na	2.9E+02	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	--	--	na	1.1E+04
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
1,2-Dichloropropane <sup>C</sup>	0	--	--	na	1.5E+02	--	--	na	2.6E+04	--	--	--	--	--	--	--	--	--	--	na	2.6E+04
1,3-Dichloropropane <sup>C</sup>	0	--	--	na	2.1E+02	--	--	na	3.7E+04	--	--	--	--	--	--	--	--	--	--	na	3.7E+04
Dieldrin <sup>C</sup>	0	2.4E-01	5.6E-02	na	5.4E-04	3.6E-01	5.8E-01	na	9.4E-02	--	--	--	--	--	--	--	--	3.6E-01	5.8E-01	na	9.4E-02
Diethyl Phthalate	0	--	--	na	4.4E+04	--	--	na	1.7E+06	--	--	--	--	--	--	--	--	--	--	na	1.7E+06
2,4-Dimethylphenol	0	--	--	na	8.5E+02	--	--	na	3.3E+04	--	--	--	--	--	--	--	--	--	--	na	3.3E+04
Dimethyl Phthalate	0	--	--	na	1.1E+06	--	--	na	4.2E+07	--	--	--	--	--	--	--	--	--	--	na	4.2E+07
Di-n-Butyl Phthalate	0	--	--	na	4.5E+03	--	--	na	1.7E+05	--	--	--	--	--	--	--	--	--	--	na	1.7E+05
2,4 Dinitrophenol	0	--	--	na	5.3E+03	--	--	na	2.0E+05	--	--	--	--	--	--	--	--	--	--	na	2.0E+05
2-Methyl-4,6-Dinitrophenol	0	--	--	na	2.8E+02	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	--	--	na	1.1E+04
2,4-Dinitrotoluene <sup>C</sup>	0	--	--	na	3.4E+01	--	--	na	5.9E+03	--	--	--	--	--	--	--	--	--	--	na	5.9E+03
tetrachlorodibenzo-p-dioxin	0	--	--	na	5.1E-08	--	--	na	2.0E-06	--	--	--	--	--	--	--	--	--	--	na	2.0E-06
1,2-Diphenylhydrazine <sup>C</sup>	0	--	--	na	2.0E+00	--	--	na	3.5E+02	--	--	--	--	--	--	--	--	--	--	na	3.5E+02
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	3.3E-01	5.8E-01	na	3.4E+03	--	--	--	--	--	--	--	--	3.3E-01	5.8E-01	na	3.4E+03
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	3.3E-01	5.8E-01	na	3.4E+03	--	--	--	--	--	--	--	--	3.3E-01	5.8E-01	na	3.4E+03
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	3.3E-01	5.8E-01	--	--	--	--	--	--	--	--	--	--	3.3E-01	5.8E-01	--	--
Endosulfan Sulfate	0	--	--	na	8.9E+01	--	--	na	3.4E+03	--	--	--	--	--	--	--	--	--	--	na	3.4E+03
Endrin	0	8.6E-02	3.6E-02	na	6.0E-02	1.3E-01	3.7E-01	na	2.3E+00	--	--	--	--	--	--	--	--	1.3E-01	3.7E-01	na	2.3E+00
Endrin Aldehyde	0	--	--	na	3.0E-01	--	--	na	1.2E+01	--	--	--	--	--	--	--	--	--	--	na	1.2E+01

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	na	2.1E+03	--	--	na	8.1E+04	--	--	--	--	--	--	--	--	--	--	na	8.1E+04
Fluoranthene	0	--	--	na	1.4E+02	--	--	na	5.4E+03	--	--	--	--	--	--	--	--	--	--	na	5.4E+03
Fluorene	0	--	--	na	5.3E+03	--	--	na	2.0E+05	--	--	--	--	--	--	--	--	--	--	na	2.0E+05
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Heptachlor <sup>C</sup>	0	5.2E-01	3.8E-03	na	7.9E-04	7.9E-01	3.9E-02	na	1.4E-01	--	--	--	--	--	--	--	--	7.9E-01	3.9E-02	na	1.4E-01
Heptachlor Epoxide <sup>C</sup>	0	5.2E-01	3.8E-03	na	3.9E-04	7.9E-01	3.9E-02	na	6.8E-02	--	--	--	--	--	--	--	--	7.9E-01	3.9E-02	na	6.8E-02
Hexachlorobenzene <sup>C</sup>	0	--	--	na	2.9E-03	--	--	na	5.1E-01	--	--	--	--	--	--	--	--	--	--	na	5.1E-01
Hexachlorobutadiene <sup>C</sup>	0	--	--	na	1.8E+02	--	--	na	3.1E+04	--	--	--	--	--	--	--	--	--	--	na	3.1E+04
Hexachlorocyclohexane																					
Alpha-BHC <sup>C</sup>	0	--	--	na	4.9E-02	--	--	na	8.5E+00	--	--	--	--	--	--	--	--	--	--	na	8.5E+00
Hexachlorocyclohexane																					
Beta-BHC <sup>C</sup>	0	--	--	na	1.7E-01	--	--	na	3.0E+01	--	--	--	--	--	--	--	--	--	--	na	3.0E+01
Hexachlorocyclohexane																					
Gamma-BHC <sup>C</sup> (Lindane)	0	9.5E-01	na	na	1.8E+00	1.4E+00	--	na	3.1E+02	--	--	--	--	--	--	--	--	1.4E+00	--	na	3.1E+02
Hexachlorocyclopentadiene	0	--	--	na	1.1E+03	--	--	na	4.2E+04	--	--	--	--	--	--	--	--	--	--	na	4.2E+04
Hexachloroethane <sup>C</sup>	0	--	--	na	3.3E+01	--	--	na	5.8E+03	--	--	--	--	--	--	--	--	--	--	na	5.8E+03
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	2.1E+01	na	--	--	--	--	--	--	--	--	--	--	2.1E+01	na	--
Indeno (1,2,3-cd) pyrene <sup>C</sup>	0	--	--	na	1.8E-01	--	--	na	3.1E+01	--	--	--	--	--	--	--	--	--	--	na	3.1E+01
Iron	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Isophorone <sup>C</sup>	0	--	--	na	9.6E+03	--	--	na	1.7E+06	--	--	--	--	--	--	--	--	--	--	na	1.7E+06
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Lead	0	6.4E+01	1.0E+01	na	--	9.7E+01	1.1E+02	na	--	--	--	--	--	--	--	--	--	9.7E+01	1.1E+02	na	--
Malathion	0	--	1.0E-01	na	--	--	1.0E+00	na	--	--	--	--	--	--	--	--	--	--	1.0E+00	na	--
Manganese	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Mercury	0	1.4E+00	7.7E-01	--	--	2.1E+00	8.0E+00	--	--	--	--	--	--	--	--	--	--	2.1E+00	8.0E+00	--	--
Methyl Bromide	0	--	--	na	1.5E+03	--	--	na	5.8E+04	--	--	--	--	--	--	--	--	--	--	na	5.8E+04
Methylene Chloride <sup>C</sup>	0	--	--	na	5.9E+03	--	--	na	1.0E+06	--	--	--	--	--	--	--	--	--	--	na	1.0E+06
Methoxychlor	0	--	3.0E-02	na	--	--	3.1E-01	na	--	--	--	--	--	--	--	--	--	--	3.1E-01	na	--
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Nickel	0	1.2E+02	1.7E+01	na	4.6E+03	1.8E+02	1.7E+02	na	1.8E+05	--	--	--	--	--	--	--	--	1.8E+02	1.7E+02	na	1.8E+05
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Nitrobenzene	0	--	--	na	6.9E+02	--	--	na	2.6E+04	--	--	--	--	--	--	--	--	--	--	na	2.6E+04
N-Nitrosodimethylamine <sup>C</sup>	0	--	--	na	3.0E+01	--	--	na	5.2E+03	--	--	--	--	--	--	--	--	--	--	na	5.2E+03
N-Nitrosodiphenylamine <sup>C</sup>	0	--	--	na	6.0E+01	--	--	na	1.0E+04	--	--	--	--	--	--	--	--	--	--	na	1.0E+04
N-Nitrosodi-n-propylamine <sup>C</sup>	0	--	--	na	5.1E+00	--	--	na	8.9E+02	--	--	--	--	--	--	--	--	--	--	na	8.9E+02
Nonylphenol	0	2.8E+01	6.6E+00	--	--	4.2E+01	6.8E+01	na	--	--	--	--	--	--	--	--	--	4.2E+01	6.8E+01	na	--
Parathion	0	6.5E-02	1.3E-02	na	--	9.8E-02	1.3E-01	na	--	--	--	--	--	--	--	--	--	9.8E-02	1.3E-01	na	--
PCB Total <sup>C</sup>	0	--	1.4E-02	na	6.4E-04	--	1.4E-01	na	1.1E-01	--	--	--	--	--	--	--	--	--	1.4E-01	na	1.1E-01
Pentachlorophenol <sup>C</sup>	0	9.2E-03	1.6E-02	na	3.0E+01	1.4E-02	1.7E-01	na	5.2E+03	--	--	--	--	--	--	--	--	1.4E-02	1.7E-01	na	5.2E+03
Phenol	0	--	--	na	8.6E+05	--	--	na	3.3E+07	--	--	--	--	--	--	--	--	--	--	na	3.3E+07
Pyrene	0	--	--	na	4.0E+03	--	--	na	1.5E+05	--	--	--	--	--	--	--	--	--	--	na	1.5E+05
Radionuclides																					
Gross Alpha Activity (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Beta and Photon Activity (mrem/yr)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Radium 226 + 228 (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Uranium (ug/l)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wastebad Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	na	4.2E+03	3.0E+01	5.2E+01	na	1.8E+05	--	--	--	--	--	5.2E+01	na	1.0E+05	3.0E+01	5.2E+01	na	1.0E+05
Silver	0	1.5E+00	--	na	--	2.3E+00	--	na	--	--	--	--	--	--	--	na	--	2.3E+00	--	na	--
Sulfate	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	na	--	--	--	na	--
1,1,2,2-Tetrachloroethane <sup>c</sup>	0	--	--	na	4.0E+01	--	--	na	7.0E+03	--	--	--	--	--	--	na	7.0E+03	--	--	na	7.0E+03
Tetrachloroethylene <sup>c</sup>	0	--	--	na	3.3E+01	--	--	na	5.8E+03	--	--	--	--	--	--	na	5.8E+03	--	--	na	5.8E+03
Thallium	0	--	--	na	4.7E+01	--	--	na	1.8E+01	--	--	--	--	--	--	na	1.8E+01	--	--	na	1.8E+01
Toluene	0	--	--	na	6.0E+03	--	--	na	2.3E+05	--	--	--	--	--	--	na	2.3E+05	--	--	na	2.3E+05
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	na	--	--	--	na	--
Toxaphene <sup>c</sup>	0	7.3E-01	2.0E-04	na	2.8E-03	1.1E+00	2.1E-03	na	4.9E-01	--	--	--	--	--	2.1E-03	na	4.9E-01	1.1E+00	2.1E-03	na	4.9E-01
Tributyltin	0	4.6E-01	7.2E-02	na	--	7.0E-01	7.4E-01	na	--	--	--	--	--	--	7.4E-01	na	--	7.0E-01	7.4E-01	na	--
1,2,4-Trichlorobenzene	0	--	--	na	7.0E+01	--	--	na	2.7E+03	--	--	--	--	--	--	na	2.7E+03	--	--	na	2.7E+03
1,1,2-Trichloroethane <sup>c</sup>	0	--	--	na	1.6E+02	--	--	na	2.8E+04	--	--	--	--	--	--	na	2.8E+04	--	--	na	2.8E+04
Trichloroethylene <sup>c</sup>	0	--	--	na	3.0E+02	--	--	na	5.2E+04	--	--	--	--	--	--	na	5.2E+04	--	--	na	5.2E+04
2,4,6-Trichlorophenol <sup>c</sup>	0	--	--	na	2.4E+01	--	--	na	4.2E+03	--	--	--	--	--	--	na	4.2E+03	--	--	na	4.2E+03
2-(2,4,6-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	na	--	--	--	na	--
Vinyl Chloride <sup>c</sup>	0	--	--	na	2.4E+01	--	--	na	4.2E+03	--	--	--	--	--	--	na	4.2E+03	--	--	na	4.2E+03
Zinc	0	7.8E+01	9.8E+01	na	2.6E+04	1.2E+02	1.0E+03	na	1.0E+06	--	--	--	--	--	1.0E+03	na	1.0E+06	1.2E+02	1.0E+03	na	1.0E+06

#### Notes:

- All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
- Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
- Metals measured as Dissolved, unless specified otherwise
- "C" indicates a carcinogenic parameter
- Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.  
Antidegradation WLAs are based upon a complete mix.
- Antideg. Baseline =  $(0.25(WQC - \text{background conc.}) + \text{background conc.})$  for acute and chronic  
=  $(0.1(WQC - \text{background conc.}) + \text{background conc.})$  for human health
- WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)
Antimony	2.5E+04
Arsenic	2.1E+02
Barium	na
Cadmium	1.4E+00
Chromium III	2.3E+02
Chromium VI	9.7E+00
Copper	5.1E+00
Iron	na
Lead	3.9E+01
Manganese	na
Mercury	8.5E-01
Nickel	7.3E+01
Selenium	1.2E+01
Silver	9.0E-01
Zinc	4.7E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance



## Mixing Zone Predictions for

Aldie WWTP

Annual

Effluent Flow = .015 MGD  
Stream 7Q10 = .14 MGD  
Stream 30Q10 = .3 MGD  
Stream 1Q10 = .11 MGD  
Stream slope = .001 ft/ft  
Stream width = 25 ft  
Bottom scale = 3  
Channel scale = 1

---

### Mixing Zone Predictions @ 7Q10

Depth = .1026 ft  
Length = 3963.26 ft  
Velocity = .0934 ft/sec  
Residence Time = .4909 days

#### Recommendation:

A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used.

---

### Mixing Zone Predictions @ 30Q10

Depth = .1574 ft  
Length = 2762.33 ft  
Velocity = .1239 ft/sec  
Residence Time = .2581 days

#### Recommendation:

A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used.

---

### Mixing Zone Predictions @ 1Q10

Depth = .0902 ft  
Length = 4407.69 ft  
Velocity = .0858 ft/sec  
Residence Time = 14.2754 hours

#### Recommendation:

A complete mix assumption is appropriate for this situation providing no more than 7.01% of the 1Q10 is used.

---



## Mixing Zone Predictions for

## Aldie WWTP

*Wet Season*

Effluent Flow = .015 MGD  
Stream 7Q10 = 1.7 MGD  
Stream 30Q10 = 3.0 MGD  
Stream 1Q10 = 1.2 MGD  
Stream slope = .001 ft/ft  
Stream width = 25 ft  
Bottom scale = 3  
Channel scale = 1

---

### Mixing Zone Predictions @ 7Q10

Depth = .4391 ft  
Length = 1157.89 ft  
Velocity = .2418 ft/sec  
Residence Time = .0554 days

#### Recommendation:

A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used.

---

### Mixing Zone Predictions @ 30Q10

Depth = .6191 ft  
Length = 861.92 ft  
Velocity = .3014 ft/sec  
Residence Time = .0331 days

#### Recommendation:

A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used.

---

### Mixing Zone Predictions @ 1Q10

Depth = .3562 ft  
Length = 1384.54 ft  
Velocity = .2112 ft/sec  
Residence Time = 1.8207 hours

#### Recommendation:

A complete mix assumption is appropriate for this situation providing no more than 54.92% of the 1Q10 is used.

---



## Attachment 6

# VaFWIS - Department of Game and Inland Fisheries

38,58,39.0 -77,38,14.0  
is the Search Point

## Search Point

- ☒ Change to "clicked" map point  
☐ Fixed at 38,58,39.0 - 77,38,14.0

## Show Position Rings

- ☒ Yes ☐ No  
 1 mile and 1/4 mile at the Search Point

## Show Search Area

- ☒ Yes ☐ No  
 2 Search distance miles radius

Search Point is at map center

## Base Map Choices

Topography

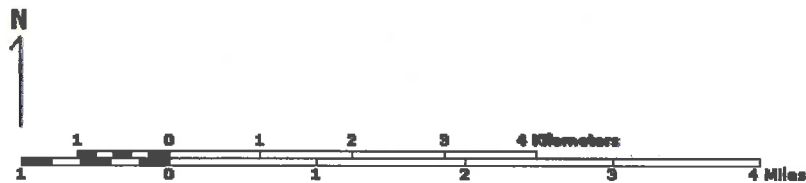
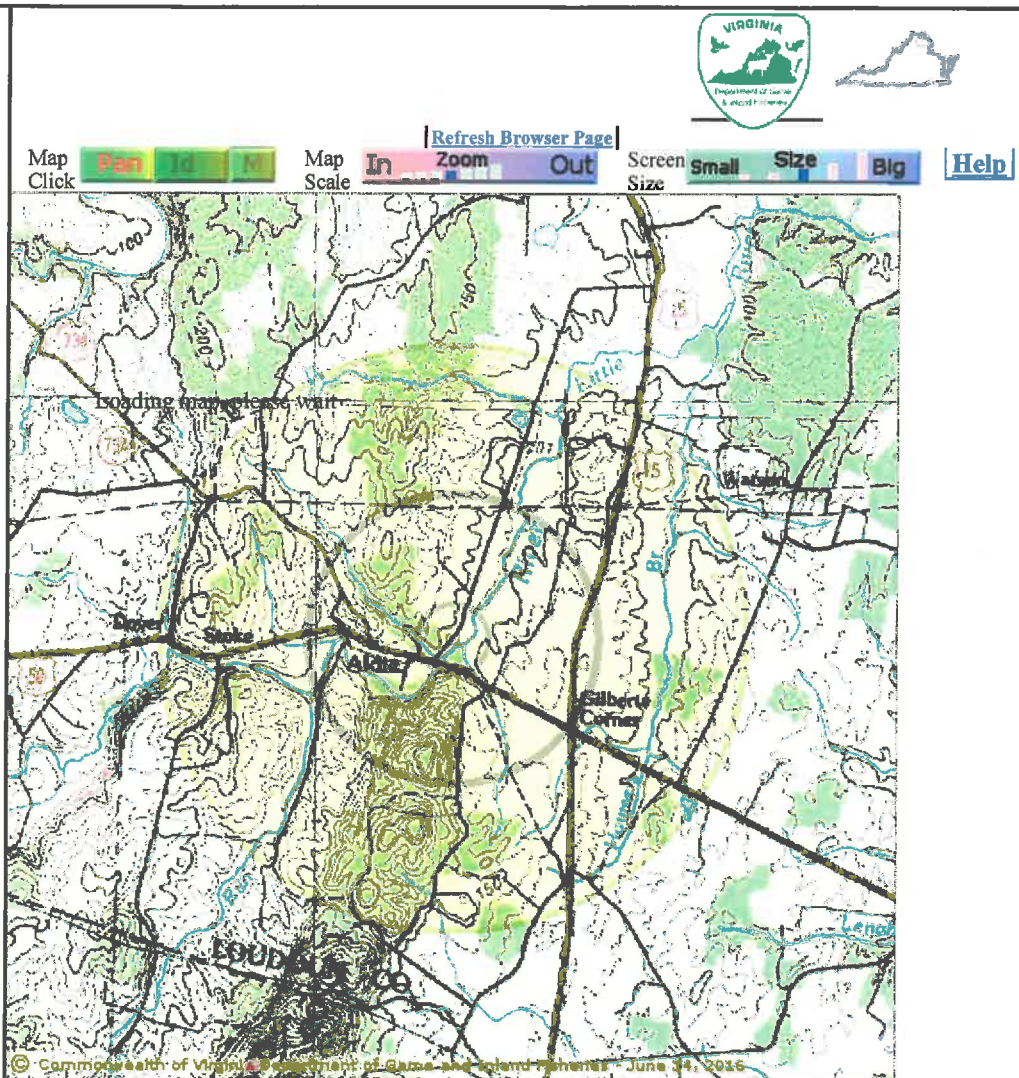
## Map Overlay Choices

Current List: Position, Search

## Map Overlay Legend

Position Rings  
 1 mile and 1/4 mile at the Search Point

2 mile radius Search Area



Point of Search 38,58,39.0 -77,38,14.0

Map Location 38,58,39.0 -77,38,14.0

Select Coordinate System: ☒ Degrees, Minutes, Seconds Latitude - Longitude

☐ Decimal Degrees Latitude - Longitude

☐ Meters UTM NAD83 East North Zone

☐ Meters UTM NAD27 East North Zone

Base Map source: USGS 1:100,000 topographic maps (see [Microsoft terraserver-usa.com](http://Microsoft.terraserver-usa.com) for details)

Map projection is UTM Zone 18 NAD 1983 with left 266751 and top 4322388. Pixel size is 16 meters. Coordinates displayed are Degrees, Minutes, Seconds North and West. Map is currently displayed as 600 columns by 600 rows for a total of 360000 pixels. The map display represents 9600 meters east to west by 9600 meters north to south for a total of 92.1 square kilometers. The map display represents 31501 feet east to west by 31501 feet north to south for a total of 35.5 square miles.

Topographic maps and Black and white aerial photography for year 1990+-

are from the United States Department of the Interior, United States Geological Survey.  
Color aerial photography aquired 2002 is from Virginia Base Mapping Program, Virginia  
Geographic Information Network.  
Shaded topographic maps are from TOPO! ©2006 National Geographic  
<http://www.national.geographic.com/topo>  
All other map products are from the Commonwealth of Virginia Department of Game and Inland  
Fisheries.

map assembled 2016-06-14 09:04:36 (qa/qc March 21, 2016 12:20 - tn=740205 dist=3218 I )  
\$poi=38.9775000-77.6372222

| [DGIF](#) | [Credits](#) | [Disclaimer](#) | Contact [shirl.dressler@dgif.virginia.gov](mailto:shirl.dressler@dgif.virginia.gov) | Please view our [privacy policy](#) |  
© 1998- 2016 Commonwealth of Virginia Department of Game and Inland Fisheries

# **VaFWIS Initial Project Assessment Report** Compiled on 6/14/2016, 9:05:06 AM

[Help](#)

Known or likely to occur within a **2 mile radius around point**  
**38,58,39.0 77,38,14.0**  
in **107 Loudoun County, VA**

[View Map of  
Site Location](#)

485 Known or Likely Species ordered by Status Concern for Conservation  
(displaying first 28) (28 species with Status\* or Tier I\*\* or Tier II\*\* )

<b>BOVA Code</b>	<b>Status*</b>	<b>Tier**</b>	<b>Common Name</b>	<b>Scientific Name</b>	<b>Confirmed</b>	<b>Database(s)</b>
060003	FESE	II	<u>Wedgemussel, dwarf</u>	Alasmidonta heterodon		BOVA
050022	FTST		<u>Bat, northern long-eared</u>	Myotis septentrionalis		BOVA
060006	SE	II	<u>Floater, brook</u>	Alasmidonta varicosa		BOVA
050020	SE		<u>Bat, little brown</u>	Myotis lucifugus lucifugus		BOVA
050027	SE		<u>Bat, tri-colored</u>	Perimyotis subflavus		BOVA
030062	ST	I	<u>Turtle, wood</u>	Glyptemys insculpta		BOVA,Habitat
040096	ST	I	<u>Falcon, peregrine</u>	Falco peregrinus		BOVA
040293	ST	I	<u>Shrike, loggerhead</u>	Lanius ludovicianus		BOVA
040379	ST	I	<u>Sparrow, Henslow's</u>	Ammodramus henslowii		BOVA
060081	ST	II	<u>Floater, green</u>	Lasmigona subviridis	<u>Yes</u>	BOVA,TEWaters,Habitat
040292	ST		<u>Shrike, migrant loggerhead</u>	Lanius ludovicianus migrans		BOVA
100248	FS	I	<u>Fritillary, regal</u>	Speyeria idalia idalia		BOVA
040093	FS	II	<u>Eagle, bald</u>	Haliaeetus leucocephalus		BOVA
100166	FS	II	<u>Skipper, Dotted</u>	Hesperia attalus slossonae		BOVA
060029	FS	III	<u>Lance, yellow</u>	Elliptio lanceolata	<u>Yes</u>	BOVA,SppObs
030063	CC	III	<u>Turtle, spotted</u>	Clemmys guttata		BOVA
030012	CC	IV	<u>Rattlesnake, timber</u>	Crotalus horridus		BOVA



040372		I	<u>Crossbill, red</u>	<i>Loxia curvirostra</i>	BOVA
040129		I	<u>Sandpiper, upland</u>	<i>Bartramia longicauda</i>	BOVA
040225		I	<u>Sapsucker, yellow-bellied</u>	<i>Sphyrapicus varius</i>	BOVA
040319		I	<u>Warbler, black-throated green</u>	<i>Setophaga virens</i>	BOVA
040306		I	<u>Warbler, golden-winged</u>	<i>Vermivora chrysoptera</i>	BOVA
040052		II	<u>Duck, American black</u>	<i>Anas rubripes</i>	BOVA
040036		II	<u>Night-heron, yellow-crowned</u>	<i>Nyctanassa violacea violacea</i>	BOVA
040213		II	<u>Owl, northern saw-whet</u>	<i>Aegolius acadicus</i>	BOVA
040105		II	<u>Rail, king</u>	<i>Rallus elegans</i>	BOVA
040320		II	<u>Warbler, cerulean</u>	<i>Setophaga cerulea</i>	BOVA
040266		II	<u>Wren, winter</u>	<i>Troglodytes troglodytes</i>	BOVA

To view **All 485 species** [View 485](#)

\* FE=Federal Endangered; FT=Federal Threatened; SE=State Endangered; ST=State Threatened;  
FC=Federal Candidate; FS=Federal Species of Concern; CC=Collection Concern

\*\* I=VA Wildlife Action Plan - Tier I - Critical Conservation Need; II=VA Wildlife Action Plan - Tier II - Very High Conservation Need; III=VA Wildlife Action Plan - Tier III - High Conservation Need;  
IV=VA Wildlife Action Plan - Tier IV - Moderate Conservation Need

Bat Colonies or Hibernacula: **Not Known**

### Anadromous Fish Use Streams

N/A

### Colonial Water Bird Survey

N/A

### Threatened and Endangered Waters (1 Reach)

[View Map of All Threatened and Endangered Waters](#)

Stream Name	T&E Waters Species		View
	Highest	BOVA Code, Status <sup>*</sup> , Tier <sup>**</sup>	

	TE <sup>*</sup>	Common & Scientific Name					Map
<u>Little River</u> (02070008)	ST	060081	ST	II	<u>Floater,</u> <u>green</u>	Lasmigona subviridis	<u>Yes</u>

**Managed Trout Streams**

N/A

**Bald Eagle Concentration Areas and Roosts**

N/A

**Bald Eagle Nests**

N/A

**Habitat Predicted for Aquatic WAP Tier I & II Species ( 5 Reaches )**

**View Map Combined Reaches from Below  
of Habitat Predicted for WAP Tier I & II  
Aquatic Species**

Stream Name	Tier Species						View Map
	Highest TE <sup>*</sup>	BOVA Code, Status <sup>*</sup> , Tier <sup>**</sup> , Common & Scientific Name					
(20700081)	ST	030062	ST	I	<u>Turtle, wood</u>	Glyptemys insculpta	<u>Yes</u>
Howsers Branch (20700081)	ST	030062	ST	I	<u>Turtle, wood</u>	Glyptemys insculpta	<u>Yes</u>
		060081	ST	II	<u>Floater, green</u>	Lasmigona subviridis	
Howsers Branch (20700081)	ST	030062	ST	I	<u>Turtle, wood</u>	Glyptemys insculpta	<u>Yes</u>
Little River (20700081)	ST	030062	ST	I	<u>Turtle, wood</u>	Glyptemys insculpta	<u>Yes</u>
		060081	ST	II	<u>Floater, green</u>	Lasmigona subviridis	
Little River (20700081)	ST	060081	ST	II	<u>Floater, green</u>	Lasmigona subviridis	<u>Yes</u>

**Habitat Predicted for Terrestrial WAP Tier I & II Species** N/A**Public Holdings:**

N/A

Compiled on 6/14/2016, 9:05:06 AM I740205.0 report=IPA searchType= R dist= 3218 poi= 38,58,39.0 77,38,14.0  
PixelSize=64; Anadromous=0.015455; BECAR=0.013973; Bats=0.010432; Buffer=0.10005; County=0.06658; Impediments=0.022684; Init=0.160678; PublicLands=0.017368;  
SppObs=0.227542; TEWaters=0.031581; TierReaches=0.071543; TierTerrestrial=0.029882; Total=0.828325; Tracking\_BOVA=0.138741; Trout=0.015868

## Attachment 7

9/6/2016 10:55:31 AM

Facility = Aldie WWTP  
Chemical = Ammonia as N  
Chronic averaging period = 30  
WLAa = 25.2  
WLAc = 30.9  
Q.L. = .2  
# samples/mo. = 1  
# samples/wk. = 1

Summary of Statistics:

# observations = 1  
Expected Value = 9  
Variance = 29.16  
C.V. = 0.6  
97th percentile daily values = 21.9007  
97th percentile 4 day average = 14.9741  
97th percentile 30 day average = 10.8544  
# < Q.L. = 0  
Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are:

## Attachment 8

## Public Notice – Environmental Permit

**PURPOSE OF NOTICE:** To seek public comment on a draft permit from the Department of Environmental Quality that will allow the release of treated wastewater into a water body in Loudoun County, Virginia.

**PUBLIC COMMENT PERIOD:** XXX, 2016 to XXX, 2016

**PERMIT NAME:** Virginia Pollutant Discharge Elimination System Permit – Wastewater issued by DEQ, under the authority of the State Water Control Board

**APPLICANT NAME, ADDRESS AND PERMIT NUMBER:** Loudoun County Sanitation Authority dba Loudoun Water, PO Box 4000, Ashburn, VA 20146, VA0062189

← **NAME AND ADDRESS OF FACILITY:** Aldie WWTP, 39506 John Mosby Hwy, Aldie, VA 20105

**PROJECT DESCRIPTION:** Loudoun Water has applied for a reissuance of a permit for the public Aldie WWTP. The applicant proposes to release treated sewage wastewaters from residential areas at a rate of 0.015 million gallons per day into a water body. The facility proposes to release the treated sewage wastewaters in the Little River in Loudoun County in the Potomac River watershed. A watershed is the land area drained by a river and its incoming streams. The permit will limit the following pollutants to amounts that protect water quality: pH, BOD<sub>5</sub>, Total Suspended Solids, *E. coli*, and Dissolved Oxygen. The facility shall monitor without limitation the following parameters: Total Nitrogen, Total Kjeldahl Nitrogen, Nitrate+Nitrite, Total Phosphorus, Flow, Influent BOD and Influent TSS.

**HOW TO COMMENT AND/OR REQUEST A PUBLIC HEARING:** DEQ accepts comments and requests for public hearing by hand-delivery, e-mail or postal mail. All comments and requests must be in writing and be received by DEQ during the comment period. Submittals must include the names, mailing addresses and telephone numbers of the commenter/requester and of all persons represented by the commenter/requester. A request for public hearing must also include: 1) The reason why a public hearing is requested. 2) A brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit. 3) Specific references, where possible, to terms and conditions of the permit with suggested revisions. A public hearing may be held, including another comment period, if public response is significant, based on individual requests for a public hearing, and there are substantial, disputed issues relevant to the permit.

**CONTACT FOR PUBLIC COMMENTS, DOCUMENT REQUESTS AND ADDITIONAL INFORMATION:** The public may review the draft permit and application at the DEQ-Northern Regional Office by appointment, or may request electronic copies of the draft permit and fact sheet.

Name: Alison Thompson

Address: DEQ-Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193

Phone: (703) 583-3834 E-mail: [Alison.Thompson@deq.virginia.gov](mailto:Alison.Thompson@deq.virginia.gov)